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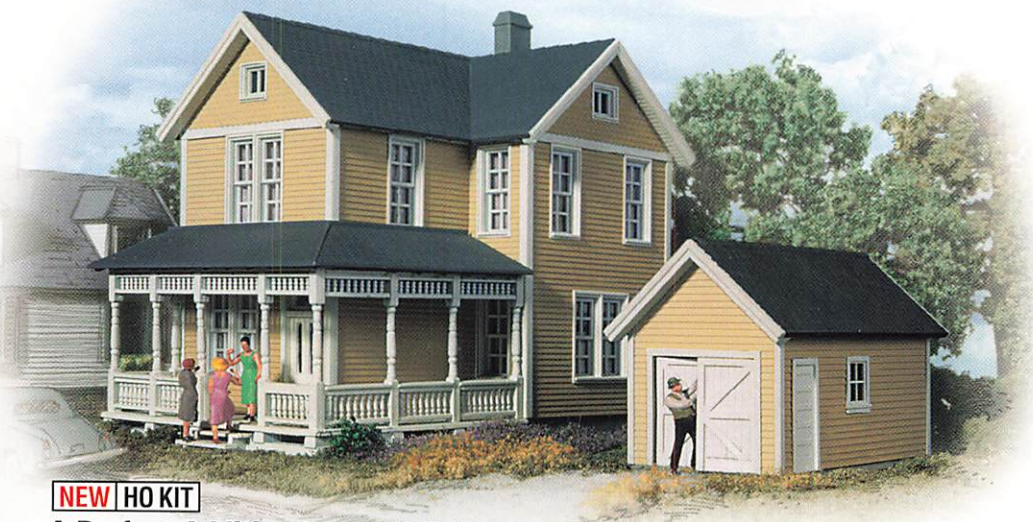

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The wraparound front porch of the two-story home at 109 Elm Street is the perfect place to relax and greet neighbors stopping by. Its open railings and spindles let the cool breeze in and the thrilling sounds of *The Shadow* on the radio drift out through the yard. This easy-to-build model offers plenty of details and a separate one-car garage with doors that swing open.

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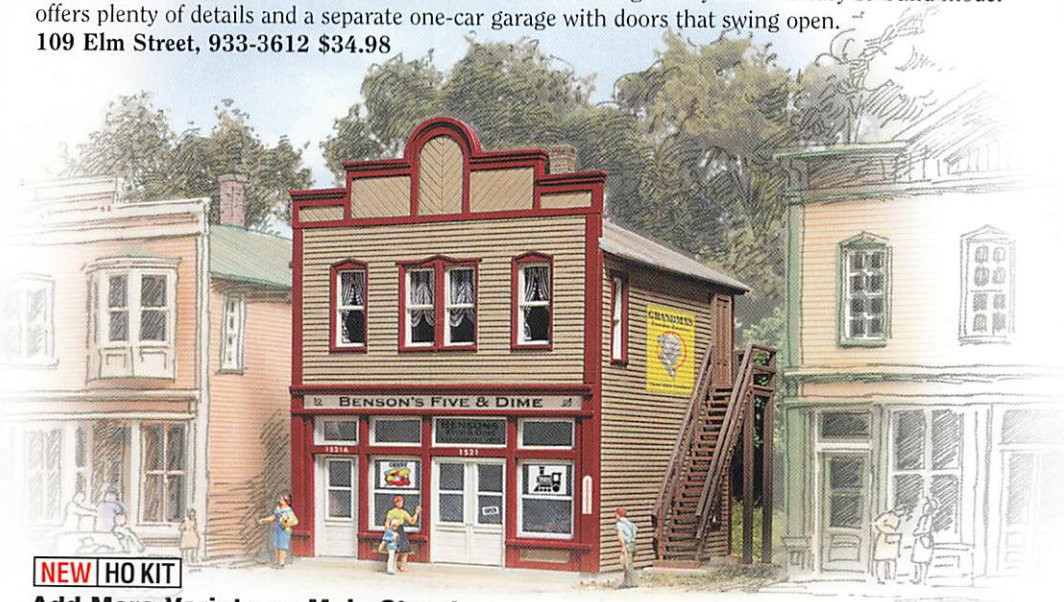

NEW HO KIT

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From fishing lures to housewares, and maybe even an ice cream soda, you'll find everything you need at neighborhood five-and-dimes like Benson's. Featuring an upper apartment with an exterior stairway, this slice of small-town Americana is patterned after stores found all across the continent. Colorful decal signs, window drapery details and interior lighting are included.

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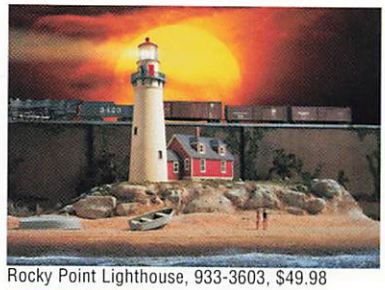

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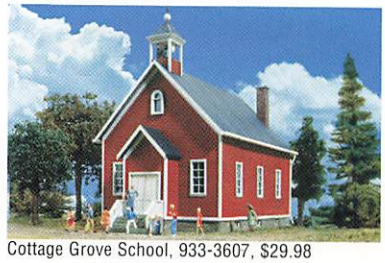

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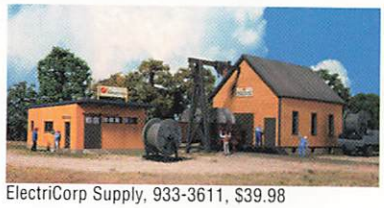

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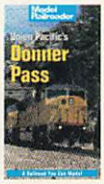

Union Pacific's Donner Pass: A Railroad You Can Model

Footage shot on location shows you everything you need to re-create one of America's most scenic mountain crossings—California's Donner Pass—on your home layout. Prototype mainline action focuses on tracks, tunnels, bridges, scenery, rolling stock, overhead views, and very little background music so you can concentrate on the action. 60 minutes; VHS; color; stereo.

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Model Railroad Scenery Made Easy

Learn scenery secrets from the experts! With simple instruction and readily accessible materials, you'll see how you can create the scenery that really brings your layout to life. From carving rocks, to mixing paints, pouring water, and planting trees, you'll learn the fool-proof, inexpensive methods that work every time! 60 minutes; VHS; color; stereo sound.

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The experts at Model Railroader Magazine show you everything there is to know about the art and fun of airbrushing with acrylic paints. From start to finish, the staff shows you the tools needed, the basic applications, and special tips and techniques to create realistic-looking engines, rolling stock, and one-of-a-kind pieces for your layout. VHS; 60 minutes; color.

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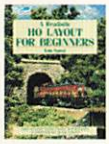

A Realistic HO Layout For Beginners

Includes step-by-step photographic instructions on constructing benchwork, laying track, wiring, building scenery, and operating trains. 8¼ x 10¾; 96 pgs.; 120 b&w and 60 color photos; 40 illus.; softcover.

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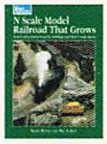

N Scale Model Railroad That Grows

Shows how to build an N scale railroad in a few easy steps. Includes instructions on constructing framework, laying track, building scenery, and assembling structures that result in an outstanding layout. 8¼ x 10¾; 96 pgs.; 150 b&w and 35 color photos; 30 illus.;softcover.

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Small, Smart, & Practical Track Plans

These clever new layout designs use interchangeable modules, linked dioramas, and even multi-level concepts! Features custom-designed prototype-oriented HO and N scale layout designs and perspective drawings for spaces no larger than 10 x 12 feet. Perfect for modelers wanting a second project layout or a portable railroad that travels well. 8¼ x 10¾; 80 pgs.; 20 b&w photos; 55 illus.; softcover.

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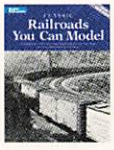

Classic Railroads You Can Model

Back by popular demand! A compilation of the editor's favorite HO and N scale track plans from two popular out-of-print books, Railroads You Can Model and More Railroads You Can Model. 8¼ x 10¾; 280 b&w photos; softcover.

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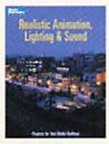

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Add more realism and life to the operation of your layout with these simple projects! They're easy to implement and don't require complicated circuitry. From the pages of Model Railroader. 8¼ x 10¾; 80 pgs.; 125 color and 25 b&w photos; 45 illus.; softcover.

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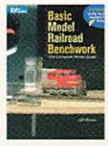

Basic Model Railroad Benchwork: The Complete Photo Guide

Step-by-step instructions and an illustrated teaching method take the mystery out of constructing benchwork. Covers the materials and tools necessary and the basic skills required to make sturdy benchwork for any size or scale layout. By Jeff Wilson. 8¼ x 10¾; 96 pgs.; 250 color photos; 25 illustrations; softcover.

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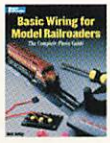

Basic Wiring for Model Railroaders: The Complete Photo Guide

Learn how to get your locomotive, train set, or complete model railroad operating—even if you don't understand the principles of electricity! Teaches basic electrical connections for a two-rail DC powered layout of any size or complexity. By Rick Selby. 8¼ x 10¾; 80 pgs.; 250 b&w photos; 25 illus.; softcover.

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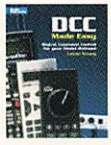

DCC Made Easy

Explains digital command control in a concise and straightforward way. Covers the history of command control, dissects the components of a DCC system, addresses the full range of commercially-available systems, and presents step-by-step projects. Ideal for all hobbyists with an interest in DCC. By Lionel Strang. 8¼ x 10¾; 48 pgs.; 100 color photos; 10 illustrations; softcover,

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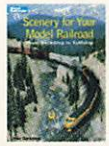
Scenery



Scenery for Your Model Railroad: From Backdrop to Tabletop

Create a more realistic scene behind and around your model railroad! This book shows you how, from ground cover and rockwork, to trees, water, and more. Learn the finishing touches that give a railroad character. By Mike Danneman. 8¼ x 10¾; 80 pgs.; 150 color and 25 b&w photos; 10 illus.; softcover.

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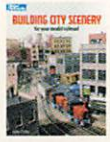

Building City Scenery for Your Model Railroad

Learn to model realistic city structures and scenes of any size in any scale! An ideal book for intermediate modelers who want to enhance realism on their layouts. By John Pryke. 8¼ x 10¾; 96 pgs.; 120 color & 40 b&w photos; 25 illus.; softcover.

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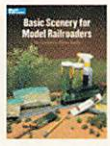

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Covers simple techniques needed to make realistic scenery for a layout of any size or scale. Each chapter includes detailed color photos, illustrations, and diagrams demonstrating the basic steps to adding prototypical scenery elements to a layout. By Lou Sassi. 8½ x 10¾; 96 pages; 200 color photographs; softcover.

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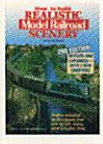

How to Build Realistic Model Railroad Scenery, 2nd. Edition

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SPECIAL ISSUE

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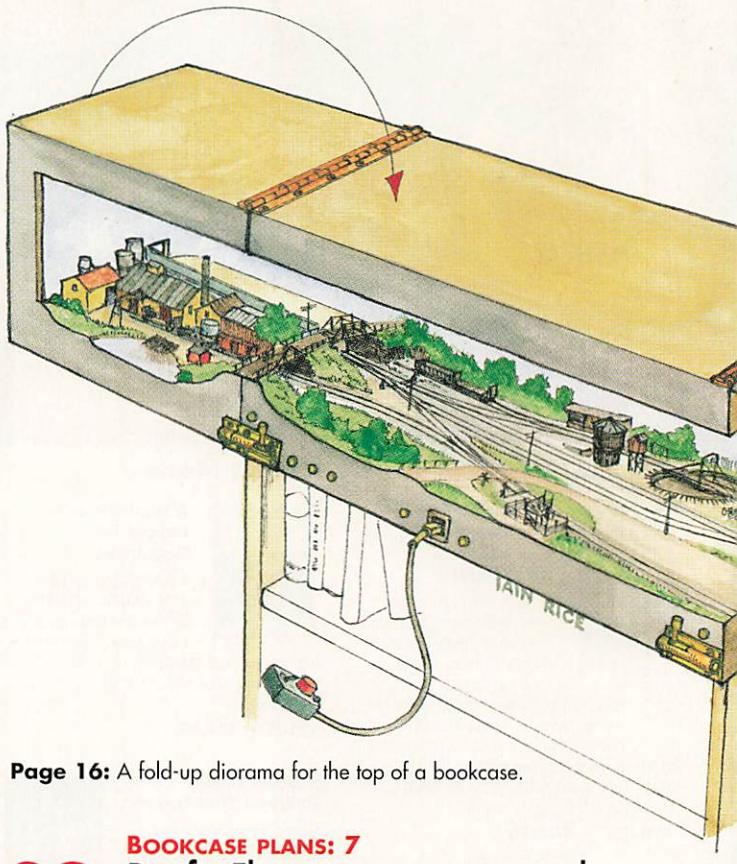
On the cover: Bernie Kempinski's N scale Bush Terminal track plan features waterfront industrial action in N scale. Photo by Bernie Kempinski.

Photos and art, clockwise from top: Iain Rice, Jim Hertzog, and Rick Johnson from a design by Tom Knapp



Page 16: A fold-up diorama for the top of a bookcase.

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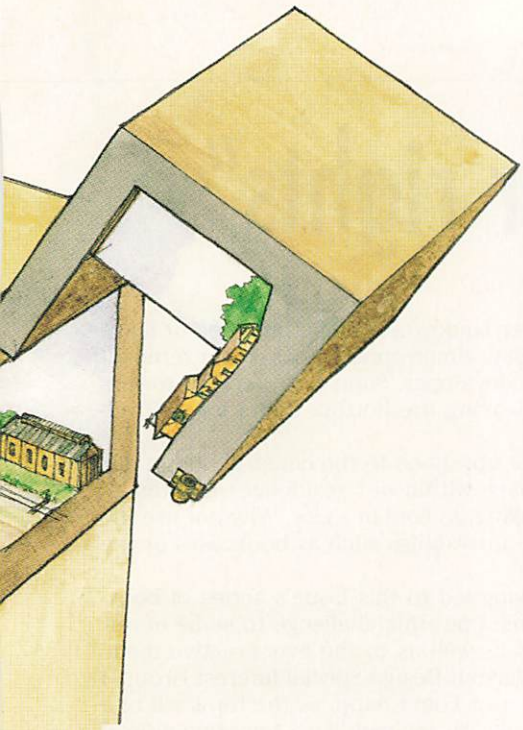

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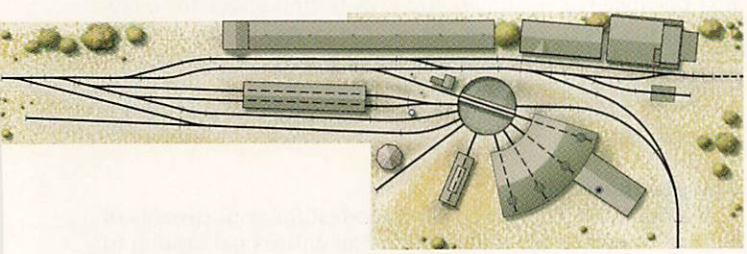

Page 20: A bookcase plan and a Layout Design Element all in one.

Model Railroad Planning 2003

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"Air rights"

Railroads and other landowners sometimes sell or lease the "air" above, say, a metropolitan passenger terminal to a commercial developer. Soon a skyscraper towers over the property, leaving the bottom floors for the railroad's use.

We can apply that approach to the construction of our model railroads. Space within our residences is often as dear, relatively speaking, as land in a city. Why not use the air rights over home furnishings such as bookcases or the TV set for a layout?

That line of thinking led to this issue's series of bookcase-size layout plans. I put this challenge to some of our regular contributors as well as to the ever-creative members of the NMRA's Layout Design Special Interest Group. I also contacted Nn3 guru Tom Knapp, as the top shelf of a typical 1 x 3-foot bookcase seemed like a tempting morsel for the 1:160 three-foot crowd.

The joy of receiving so many creative plans was quickly tempered with the realization that we could not hope to share all of the plans with you in this issue. Nine of the Nn3 fraternity, for example, responded with interesting plans, yet I had budgeted space for only one (page 20). At the other end of the spectrum, Ian Holmes contributed a G scale plan for an industrial 18"-gauge line complete with turntable, but we simply ran out of pages. If this series proves popular, perhaps we can share Ian's plan and some of the others with you in a future issue.

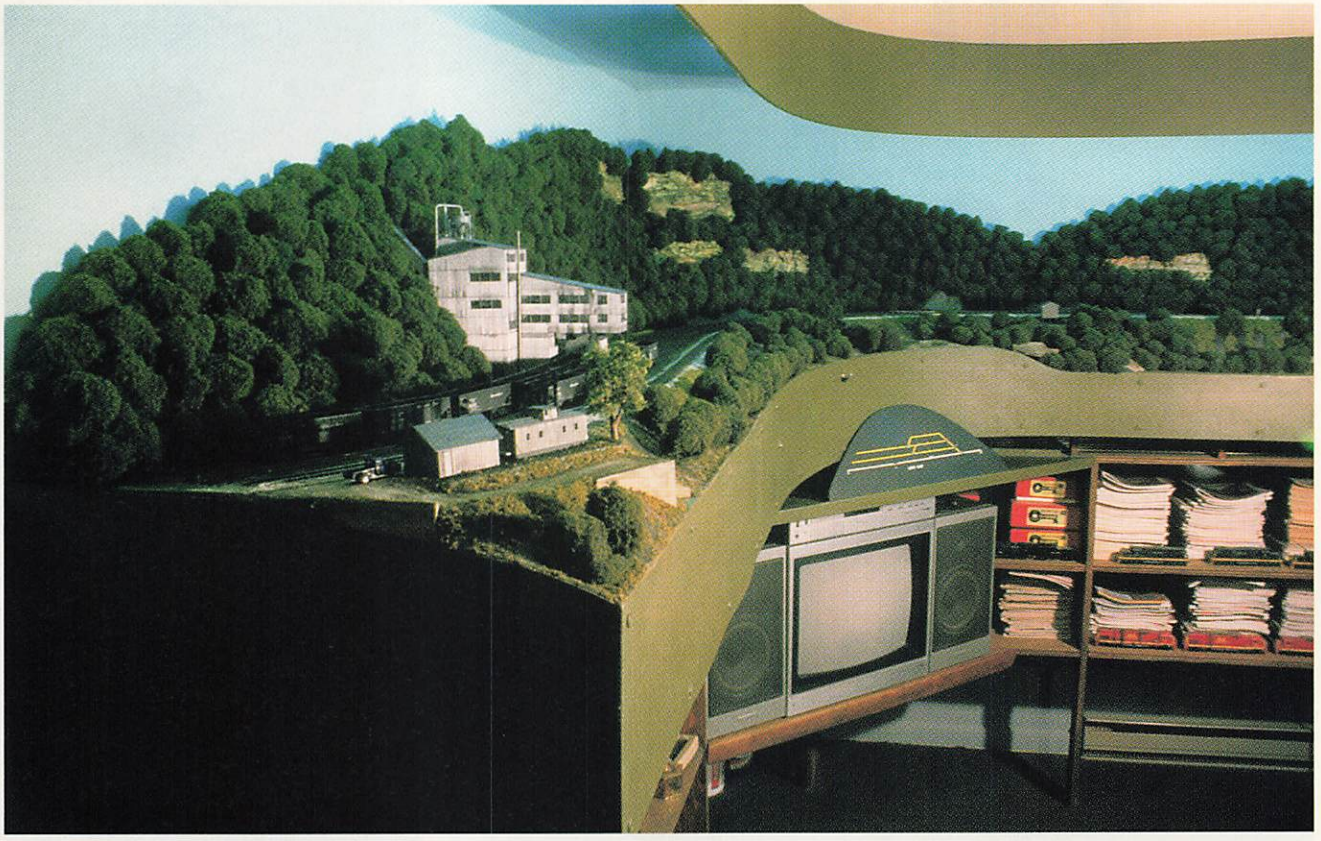
My goal here is simple: to help stamp out the endless excuses about not having enough space for a layout. I think almost everyone has enough space for some sort of layout – not the Union Pacific over Sherman Hill, perhaps, but at least an N or Z scale town or industrial switching area. Preferably, even these small layouts, layout sections, or modules will be like Tom Knapp's San Luis Obispo plan: Layout Design Elements (LDEs for short).

Layout Design Elements, long-time readers of this magazine will recall, are compressed yet recognizable – from both a scenic and an operational standpoint – prototype towns, engine terminals, yards, industries, or scenes. The idea is that you're far better off starting with a prototype plan and then altering it to suit your space and needs, even if you're free-lancing, than you are winging it with a totally free-lanced plan. You know the prototype trackage arrangement works, so you can comfortably push ahead now, even as you continue to learn about its whys and wherefores.

No excuses model railroading? Well, I won't go that far. Just because we've shown you how to find space for a layout doesn't mean you can eke out the spare time or find the funds needed to build a layout. But if you start with the certainty that you really can build something in the space you have now, finding a little time and money may be a whole lot easier to manage.

Around the wall

If a bookcase-top plan is a bit modest for your dreams of empire, consider the walls. I added an entire coal branch to the Allegheny Midland by using the space along three walls



Using the air rights over some homemade bookcases used up little floor space yet provided room for a TV, a staging yard, and above it the Coal Fork Extension of the Allegheny Midland.

of the family room above the south-end staging yard. That yard, in turn, used the "air rights" above a series of homemade bookcases. Little of the room's utility was lost, as it was still large enough to fit in a couch and love seat, end table, circular table, and comfy chair, not to mention a TV built into one corner of the bookcases, as shown in the accompanying photo.

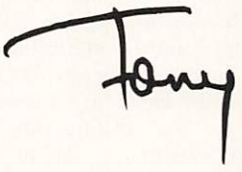
Gary Saxton went me one better and built an N scale edition of the New York, Ontario & Western on seven shelves – comprising 14 levels! – around his dining room table (page 68). Yes, it takes a sympathetic significant-other to go along with such grandiose schemes, but you never know till you ask, eh?

Decisions, decisions

One of the toughest decisions most of us have to make is what railroad to model in which era. Consider a bookcase-top plan as a chance to model an alternative prototype or free-lanced railroad, or to model in a different scale, gauge, or era.

Maybe you free-lance yet have long thought about modeling your old home town or a prototype scene that caught your eye on a vacation trip. If you model in HO, try your hand in N or Z. If a single structure such as a depot strikes your fancy, build it in S or O or No. 1 (1:32) and detail it to the nines. Include a stretch of track along the front so you can enjoy the challenge of detailing a caboose or locomotive in a larger scale.

Some of the wisest advice I ever heard about getting things done sooner rather than later was put rather succinctly: "This is not a dress rehearsal!" Hobbies add to the enjoyment of life, and it's the mission of MRP to add to your enjoyment of this hobby through creative layout design. Consider this a well-intentioned nudge to get you started on your next model railroad. If not now, when?

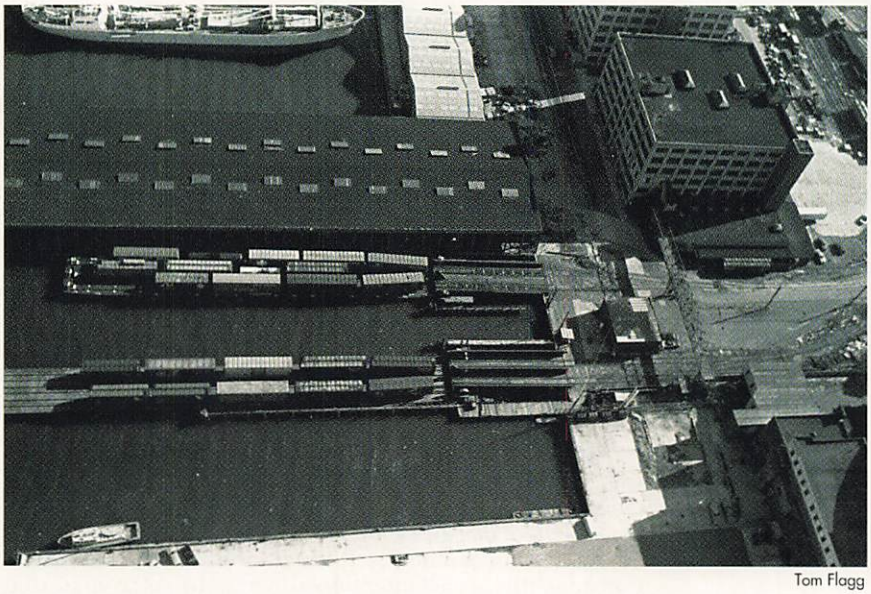


Tony Koester, editor

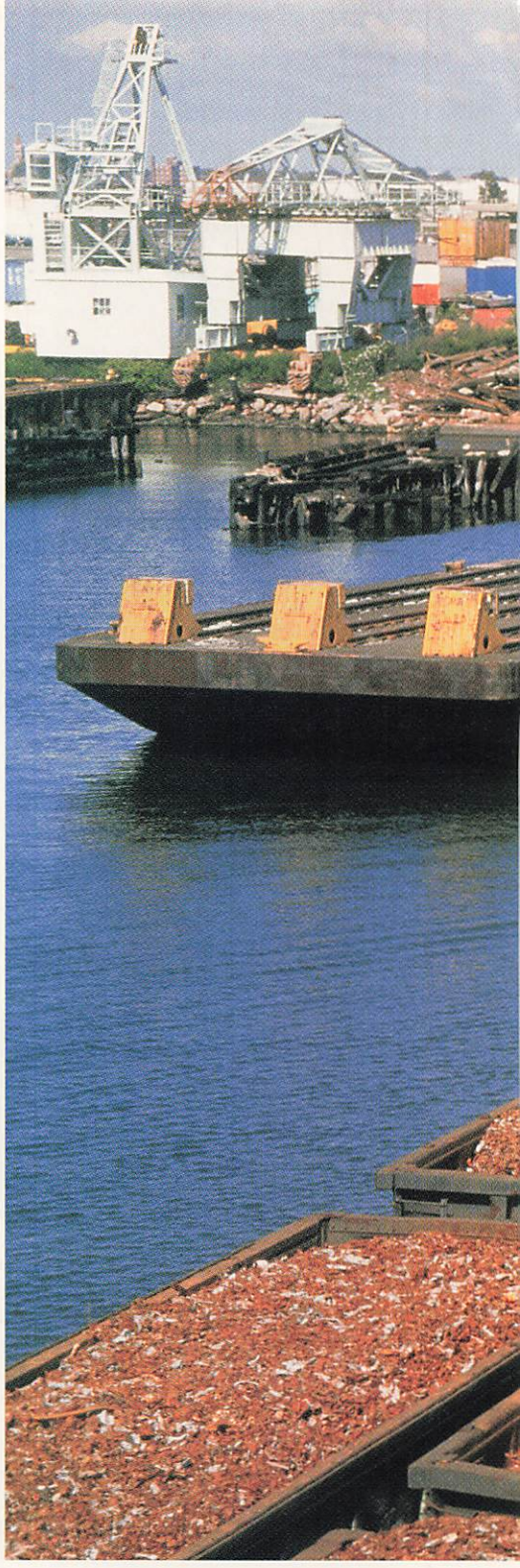
On the waterfront

The New York Cross Harbor RR's Bush Terminal offers a lot of action in N scale

By Bernard Kempinski



Tom Flagg



In the city known for skyscrapers, the buildings that most fascinated me as a young boy were the warehouses and docks of the Bush Terminal. Growing up in southern Brooklyn, N. Y., during the 1950s and '60s, I had ample opportunity to see the Bush Terminal, usually from my father's car on the elevated Gowanus Expressway.

From this lofty position overlooking the plains of brownstone apartment roofs, my gaze was fixed not on the glittering Manhattan towers in the distance, but on the stark white eight-story concrete warehouses boldly emblazoned "Bush Terminal" in black letters. The maze of identical block structures connected by bridges and catwalks, shadowy alleys, crisscrossing railroad tracks, and adjacent long, finger-like piers captured my attention.

What went on there, I wondered – sometimes with a touch of dread when my young imagination got the best of me. These questions went largely unanswered for nearly 40 years. Then I learned about Tom Flagg.

Tom is a fellow model railroader and an industrial archeologist noted for, among other achievements, his work in documenting the Bush Terminal for the Historical Architectural Engineering Record (HAER). Tom told me that the piers' decaying timbers created a drift hazard to marine navigation and had to be removed.

Joe Greenstein

Because of the terminal's historical significance, the HAER documented it as archived online at http://memory.loc.gov/ammen/hhhtml/hhhome.

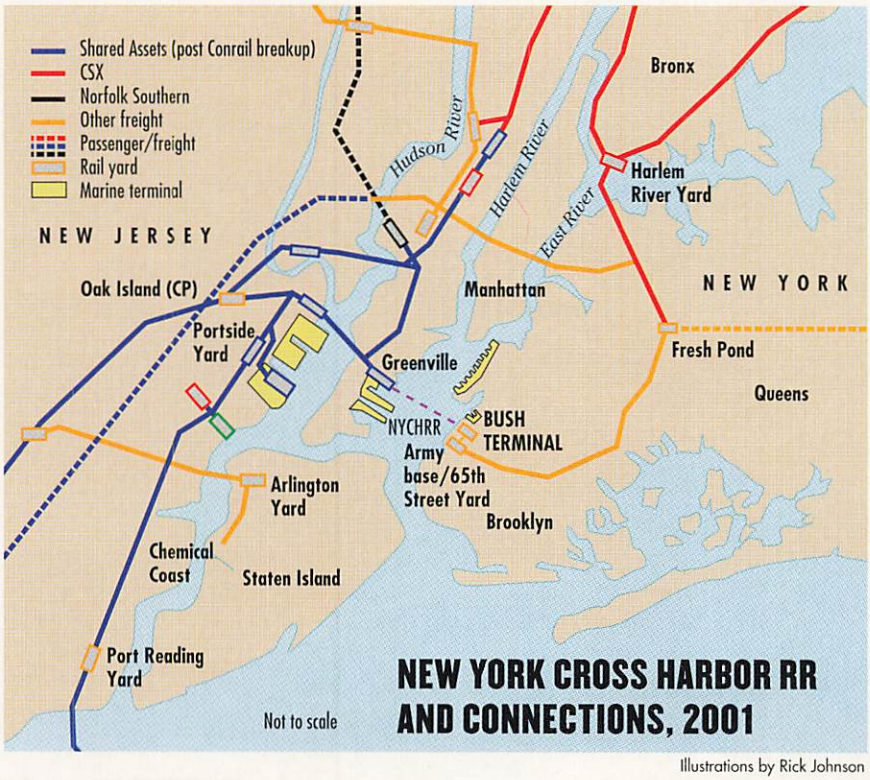
Bookcase challenge

I had already been loosely formulating a plan for a small shelf layout based on this terminal, ostensibly for my office, when MODEL RAILROAD PLANNING editor Tony Koester presented his latest layout-design challenge. He wanted to show that the top shelf of a small, inexpensive bookcase – the kind you'd find in a teenager's bedroom or college dorm, or in an apartment, condo, or mobile home – was large enough to build a model railroad. Almost everyone has space for a bookcase; he wanted to show that they also had space for a layout.

His design parameters allowed for fold-up, fold-down, or removable wings, as long everything could be collapsed

Above: Waterfront railroading is the theme of our first bookcase layout design by Bernie Kempinski. In this photo a New York Cross Harbor Alco switcher had to ride along on a car float from the Bush Terminal in Brooklyn, as no locomotive is stationed on the New Jersey side of the harbor.

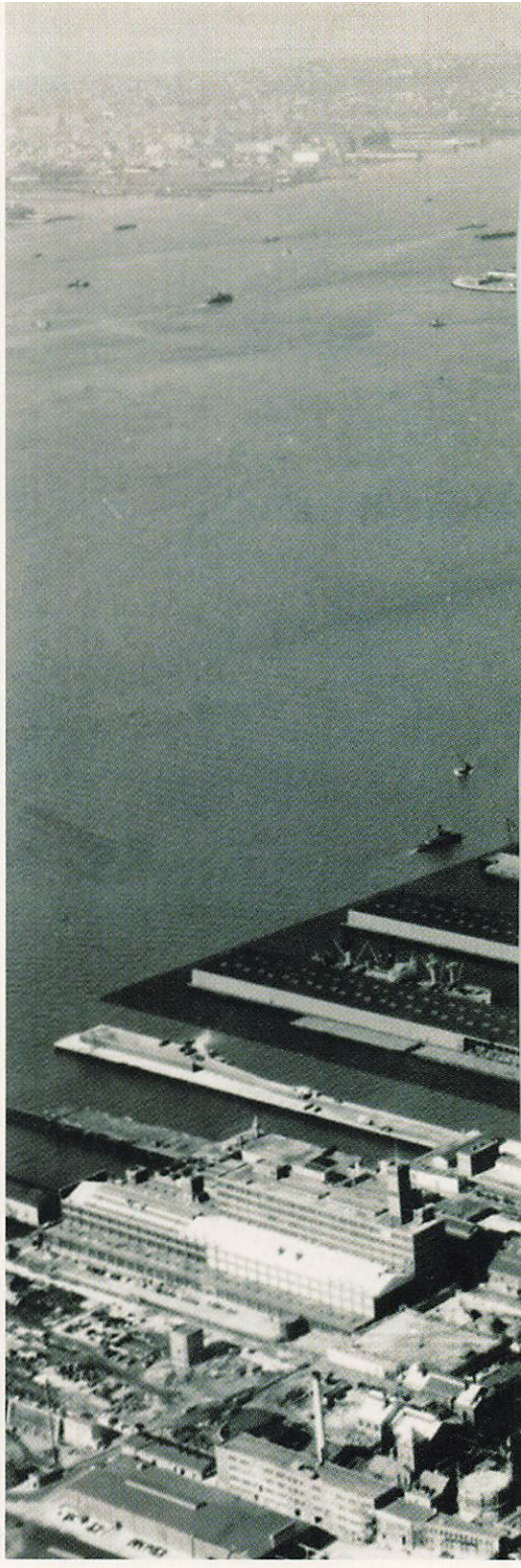
Opposite: An aerial photo shows the Bush Terminal's two car float transfer bridges in Brooklyn. See pages 10 and 11 for an overall view of this harborside complex.



Illustrations by Rick Johnson

Tom Flagg

Here's a land-side view of one of the Bush Terminal's Brooklyn car float transfer bridges. The second bridge is just visible to the left.



to the 1 x 3-foot dimensions of a typical bookcase top shelf. Adapting my plan to meet his criteria was a snap.

Irving Bush and his terminal

Developer Irving Bush decided to build a freight terminal on waterfront land he'd inherited in an undeveloped part of Brooklyn. Construction started in 1902, and by World War I Bush Terminal was the largest multi-tenant industrial property in the United States.

In the HAER's words, "Bush Terminal was the first American example of a completely integrated manufacturing and warehousing facility, served by both water and rail, under unified management. Largely intact today, it remains the largest non-railroad terminal ever built in the Port of New York . . . a rare [case] of an isolated freight railroad served only by float bridge."

There were three distinct aspects to the 200-acre terminal, all under a single management: integrated manufacturing, warehousing, and transportation services. First were the seven quarter-mile-long piers and over a hundred warehouses where break-bulk cargo was loaded into and off of ships.

Prior to Bush Terminal, loading ships in New York Harbor was a disor-

Fairchild Aerial Survey, HAER collection

This 1958 aerial view of the Bush Terminal and New York Harbor shows the transfer bridges in the lower left. The First Avenue Yard is in the center and the railroad shops are at the top (north end) of the yard.

ganized and inefficient affair. Bush and his architects carefully studied the problem, and by adopting a series of simple, comprehensive, and low-cost innovations they were able to offer highly efficient stevedore services.

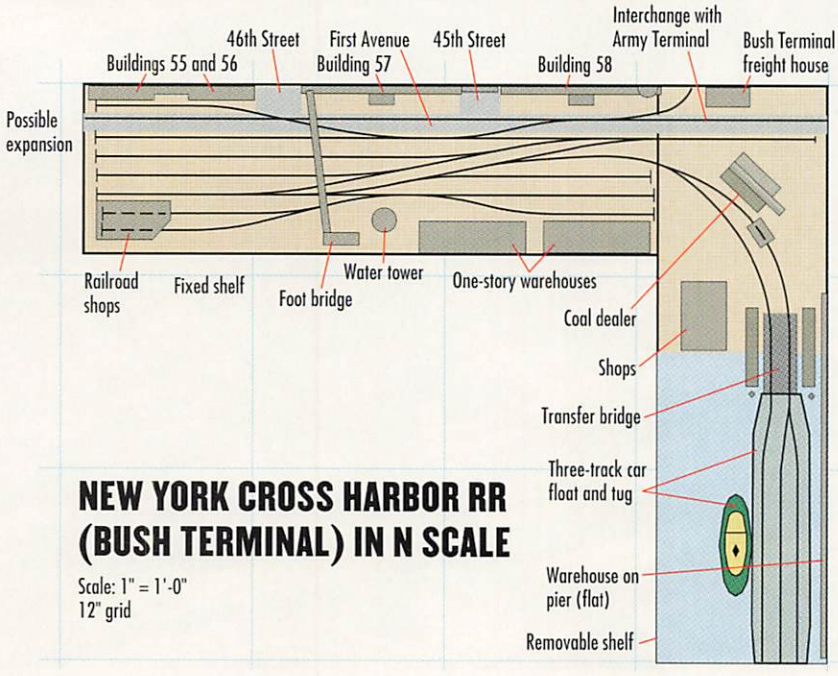
For example, Bush's piers were strongly built on fill so they could support railroad tracks. The pier sheds had battered (sloped) sides so that ships could use their onboard cranes without interference. The sheds also had a continuous set of overhead doors to make in-and-out movements easier.

The second aspect of the terminal was the business of renting the large loft warehouses that had captured my attention as a youngster. Made from reinforced concrete, a relatively new construction material when they were built, these cavernous buildings offered seemingly endless loft space to clients big or small. The concrete structure allowed walls with large windows. The buildings were all designed to have convenient access to rail sidings.

Heavy-duty freight elevators served each floor. Once a customer placed goods on an elevator, the Bush Terminal Corp. took over, transporting the

Tom Flagg

New York Cross Harbor Alco S-1 no. 22 negotiates a turn so tight that it cuts through a corner of a building at 41st Street and Second Avenue where a streetcar line once crossed the railroad.



goods to the destination via its own railroad and connections under a single freight rate. This saved shippers any additional charges for drayage to and from railroad freight houses.

The terminal had its own power plant, trolley service, fire protection, banks, and restaurants. It also offered a marketing service, including showrooms in Manhattan, allowing clients to have a presence in the city without maintaining separate branches.

The Bush Terminal RR connected all of these components as the critical links to the American rail network, either through its land connection to the Long Island RR or via car floats (barges) to other roads serving the harbor. The railroad operated several steam engines, two wooden steam tugs, six steel three-track, 18-car floats, and two wooden car floats.

The tugs and floats would pick up cars from around the harbor and bring them to the Bush Terminal transfer bridges. The cars traveled via the transfer bridges to the First Avenue Yard, which had a capacity of 2,000 cars, to be sorted and then delivered to piers, warehouses, or factories. In later years the railroad used second-hand diesels, such as Alco S-1s and an RS-3, plus several GE 55- and 80-tonners.

In the 1960s, the break-bulk freight business declined and wiped out the Bush Terminal Co's. shipping tenants. Some industries remained in the loft warehouse side of the operation. By 1978, when operated by the Industry City at Bush Terminal, the inland business remained substantially intact, but the waterfront piers had suffered from neglect and several fires. The Army Corps of Engineers removed the piers between 1978 and 1980.

Amazingly, the railroad car floats are still in operation under the ownership of the New York Cross Harbor RR. The NYCH runs all three of the remaining rail terminals along the Brooklyn waterfront, including Bush Terminal, using a stable of three Alco S-1s, one S-4, and two Electro-Motive Division NW2s. Its core business is the movement of corn syrup, lumber, rice, newsprint, electronics, plastic pellets,

References

"Bush Terminal Company," HAER No. NY-201, 1989, by Michael Raber and Thomas Flagg

"The Cross Harbor: Big Apple Shortline Railroading," *Railpace*, September 1992, by Carl G. Perelman and John P. Krattinger

"Ya Gotta Love This Town," *Railnews*, May 1997, by Joe Greenstein

and bricks. The railroad also handles intermodal traffic, primarily containers of refuse and scrap on flatcars.

On an average workday, the NYCH moves 18 cars on its floats across the harbor to the former Conrail yard at Greenville, N. J. Besides freight cars going to the warehouses, New York City subway cars occasionally move to maintenance points on the floats. At First Avenue Yard the NYCH has its enginehouse, a bulk facility to transfer plastic resin from freight cars to trucks, and a small intermodal terminal.

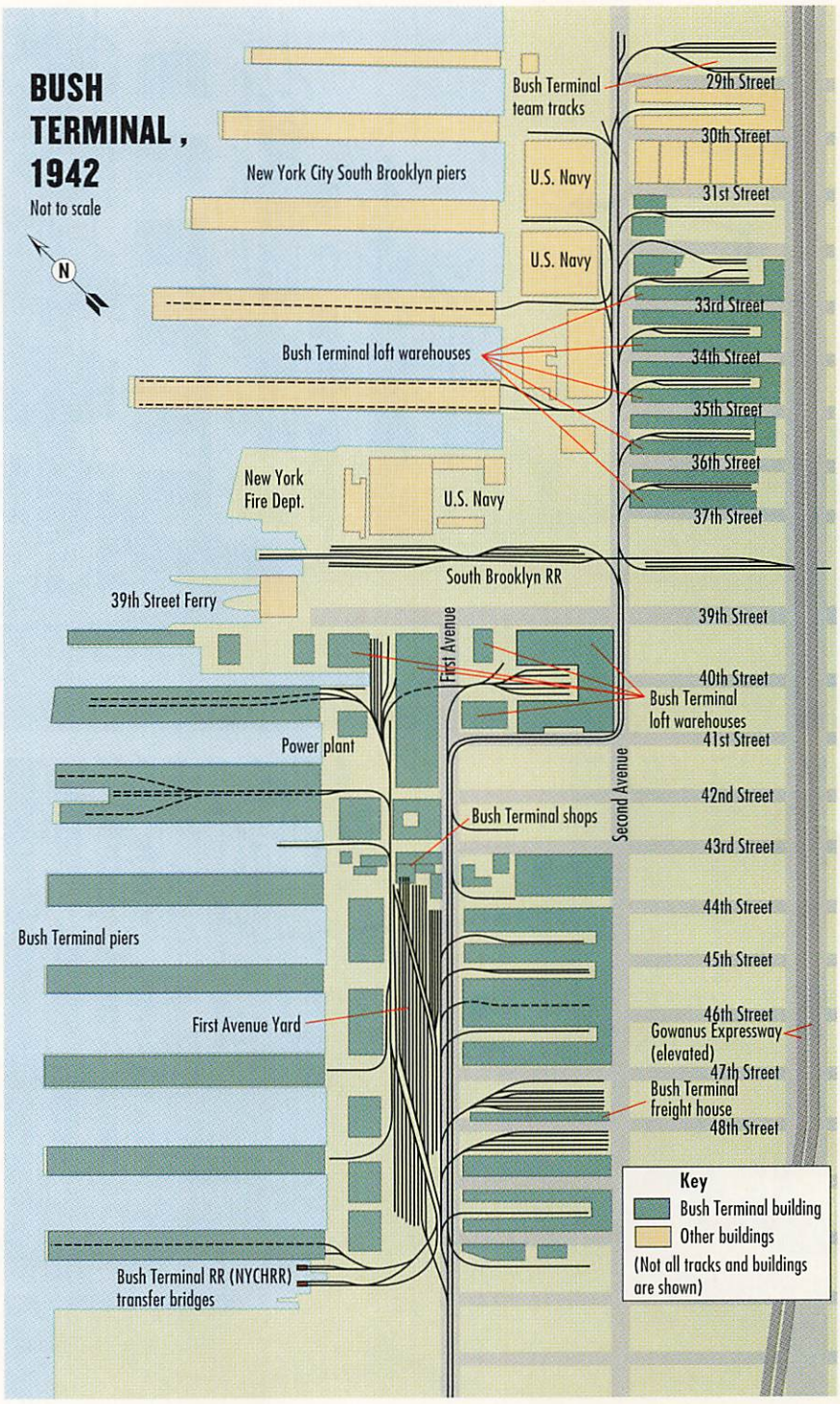
The layout plan

Distilling a 200-acre complex down to a model railroad that fits on a bookcase requires a lot of selective compression, even in N scale (1:160 proportion). Nonetheless, two 10" x 36" shelves provide enough room for a convincing representation of the Bush Terminal while including some features from the surrounding area.

The shelf containing the transfer bridges is removable and can be stored separately. There are no turnouts spanning the joint between the shelves. The basic arrangement of the tracks and transfer bridge for the model plan follows the prototype. Of course, I reduced the number of tracks.

I chose to model the modern period with the NYCH working the terminal. The scaled-down operations of the modern period suit this small railroad well. This also permits the use of some fine-running N scale switchers such as the Arnold S-2 or Life-Like SW1200. The sight of Alco switchers with cuts of modern cars running in the streets, twisting around warehouses, and switching float bridges is a spectacle definitely worth modeling.

Because of the limited depth of the shelf, there wasn't enough room for tracks to run perpendicular to the waterfront between the loft warehouses. Connecting the shallow loft structures with overhead bridges (a feature more common in the adjacent Army supply base than Bush Terminal



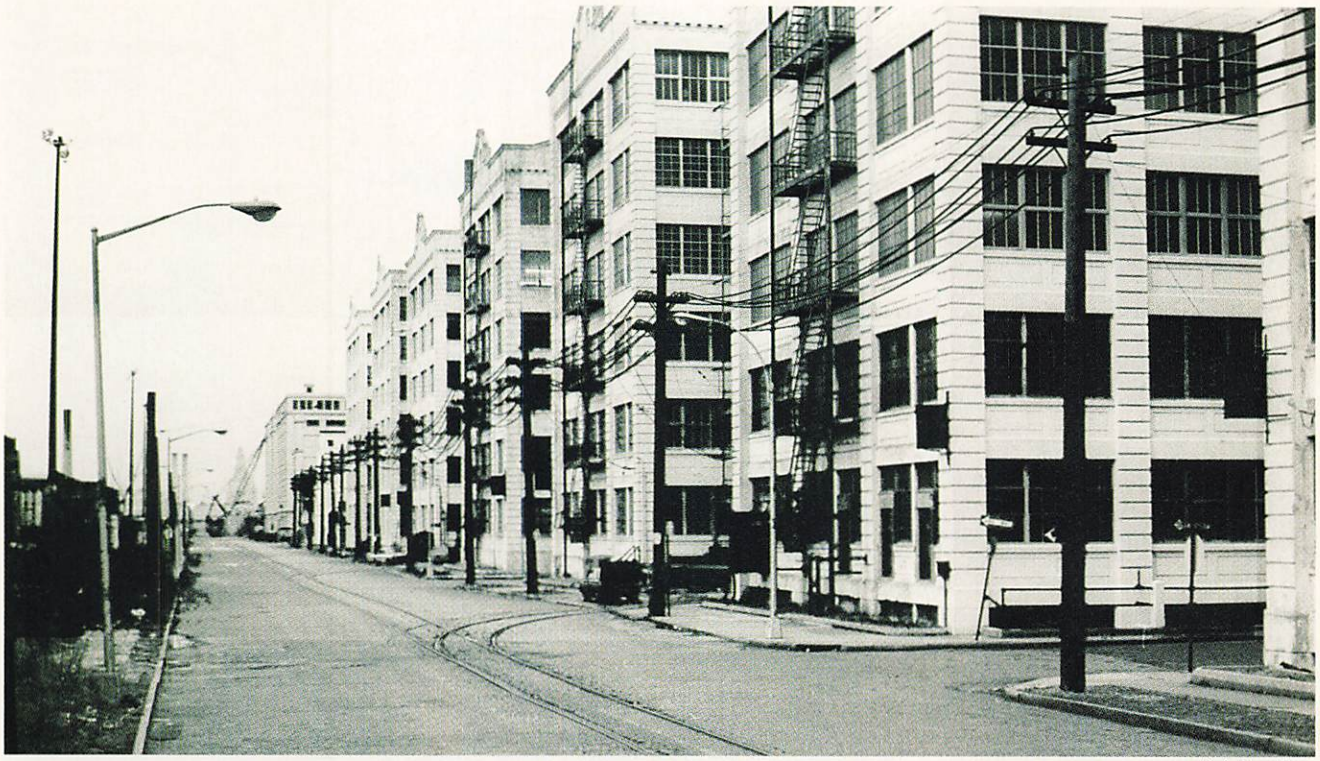
but used here to hide the backdrop) helps create the illusion that the buildings extend deep into the scene.

Control and operation

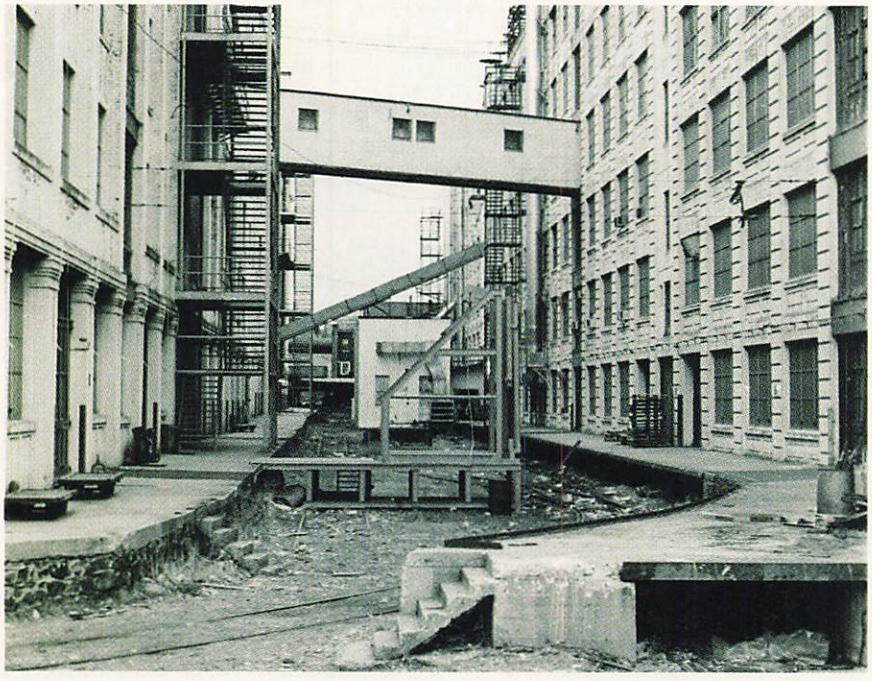
For control, I'd use a Digital Command Control (DCC) system. It would allow two engines and crews to work the layout at a time, although it would also work well to have just one crew.

Operation on this layout would be similar to the prototype's. We do have the luxury of easily lifting an illegally parked car out of our switch engine's way instead of having to find the owner to get it moved or calling a tow truck to have it towed.

I'd use the car floats as a staging yard without making them removable. That is, an operating session would start with inbound cars waiting on the floats. To extend the session, you could fiddle (manually change) cars on the float for variety. The floats are nearly



Both: Tom Flagg



Above: Tracks curve sharply into narrow alleys between warehouses to reach lofts along Second Avenue.

Left: One of those alleys sports a curved loading dock and lots of interesting clutter.

Learning points

- Almost everyone has space for a small bookcase, and so for a bookcase-top layout or layout section.
- Childhood memories of a local railroad can form a rewarding theme for a layout.
- A car float or ferry is an excellent way to interchange equipment with the wider rail network, even if it's not removable.
- A logical extension to this plan would be another layout section depicting the terminal on the other side of the river.

scale length and hold eight 50-foot cars. Remember to include a locomotive on the float when it's are ready to "depart," as the engine will be needed at Greenville Yard in New Jersey.

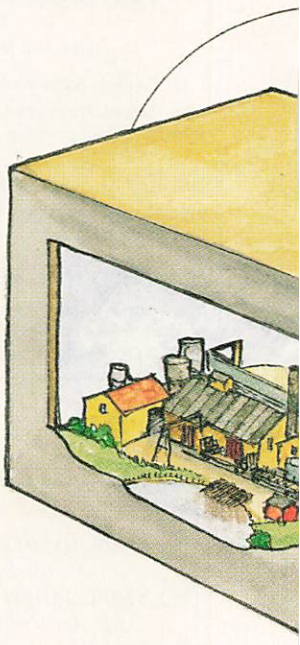
Another key point is that the car float should not be used as a classification track. Cars should be pulled from the float in groups and classified in the First Avenue Yard.

There are three locations where cars can be spotted: the Loft Warehouse A, the warehouses near the front edge, and the interchange track. To make the switching more interesting, designate specific spots on each track for certain customers.

First Avenue Yard has two ladders and seven tracks that can be used for classification, car storage, and layover. Some of the First Avenue Yard tracks can be designated for plastic resin transfer to trucks and for intermodal use in the modern period. Finally, a small railroad shop can be used for bad-order cars (cars needing repair) and engine service – all in all, quite a lot of action in a small area. MRP

Bernard Kempinski is a defense analyst residing in Alexandria, Va., with his wife, Alicia. He is a regular contributor of creative track plans to MRP. He is also the proprietor of Alkem Scale Models, offering photo-etched detail parts and kits for model railroaders.

Short lines in HO and N



California and Florida railroads inspired two small track plans

By Iain Rice
Illustrations by the author

This year's layout-design challenge certainly gave me something to chew on. Small layouts are a bit of a specialty with me, but one to sit atop a bookshelf measuring only 1 x 3 feet? The editor will next have us arranging track on the back of a postage stamp!

The good news was the plan could be a tad larger, but with a challenging caveat: It could be as long as I liked, provided the layout could be collapsed to the footprint of said bookshelf.

Something old . . .

Several years ago I designed a small British-style layout for Francis Minay, an old friend of mine who's an Anglican priest with very little space in his crowded parsonage study for a model railroad. After a bit of head-scratching, I realized there was a reasonable length that could be hijacked – but only when his desk and filing cabinet were not in use. The answer proved to be a folding layout that sat on top of – you've guessed it – a bookcase when stowed and stretched across his desk and file cabinet when set up for operation.

To allow this, I devised a base for the layout that opened out like an old dining-table my grandmother had when I was a kid: Flaps folded out from atop the table onto supports that slid out from beneath it. This scheme worked pretty well, and I've used the same principle on compact layout designs a number of times since.

My Dutch-prototype HO exhibition layout (2 x 11 feet opened up but only half as long folded) is built this way, and it has survived a decade of being carted around Europe in the back of an ancient Volvo. I christened this type of baseboard the "Vicarage Study" style.

Another concept for very small layouts that I first tried some years ago is what I call a "cameo." This is a tiny but complete and self-contained one-piece diorama that incorporates a greater degree of scenic development than is usually found on such pikes. It incorporates a full backdrop as part of the base structure and uses a "staged" presentation to set off the modeling. Cameos are worked by complementary fiddle yard systems that fit on one or both ends of the modeled scene.

. . . and something new

It occurred to me that it might be possible to combine these two design ideas to produce a folding cameo. After a bit of sketching, I had the bones of a baseboard structure I thought would allow such a marriage – even without the slide-out supports of the original.

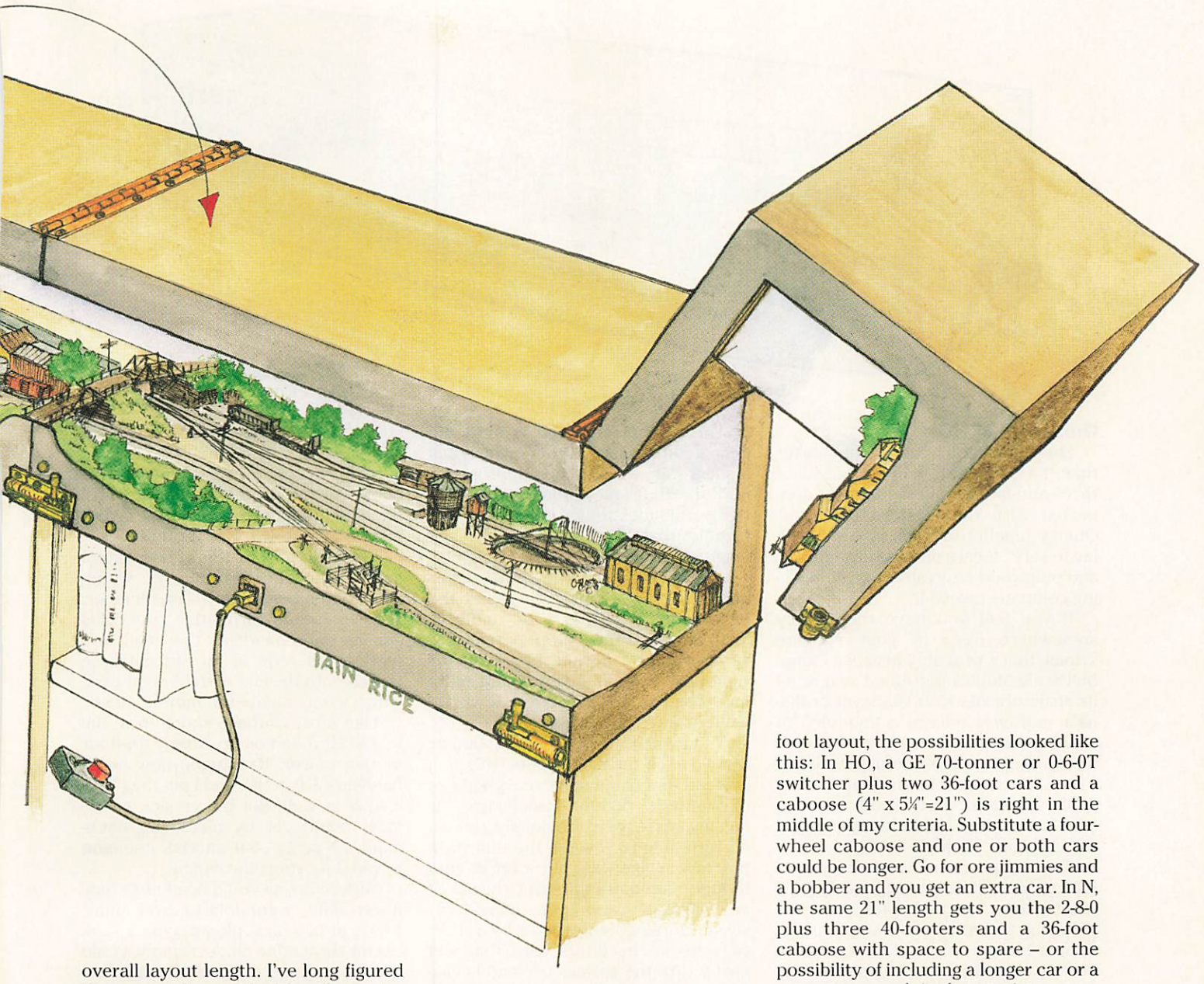
To check out this design, I made a quarter-scale mock-up out of cardstock, an idea I recommend for spotting snags in layout structures that look seductively good on a flat piece of paper but don't always work as well in three-dimensional lumber. Presto! It came out just fine.

The result is shown in my perspective sketch. I'd build the main baseboard from fairly solid lumber but make the fold-outs entirely from ¼" plywood glued and pinned together. This would keep the weight of these sections low and avoid putting a strain on the hinges holding it all together, while the heavier base unit would keep it stable. This construction permits a layout of double the stowed length – a nominal 1 x 6 feet. Not exactly huge even then, but it offers a lot more possibilities than a scant 36" of right-of-way.

Small trains for small roads

You can run a small train on a big layout, but you can't do things the other way around. So, in the context of an absolute minimum-space odyssey like this, the shorter the equipment the better. That points in two possible directions: choosing the most abbreviated locos and rolling stock available in HO or using a smaller scale such as N. I explored both.

The essential point here is the relationship of maximum train length to



overall layout length. I've long figured there must be an ideal baseline ratio between the two for minimum-space layouts. After a lot of fiddling, I came to the conclusion that the answer lies between a third and a quarter, depending on the equipment used.

For a layout using a fiddle track, cassette, or other form of staging as an off-scene destination, there's no point in making this any longer than the total length of the longest train. An inch too long here is an inch wasted – and if you have only a scant 72 of the things to start with, there are none to spare!

A typical HO diesel switcher like an Alco S or EMD SW is 6" long over couplers, but a GE 70-tonner is only 5¼" long, a 44-tonner a mere 4¾". For steam buffs, Bachmann's Spectrum saddle-tank 0-6-0T comes in at 5". Likewise, a standard 40-foot freight car measures a tad over 6", but a 36-foot car or caboose comes in at 5¼", while a 24-foot ore jimmy or a four-wheel bobber accounts for only 3½" (all measured over Kadee no. 5 couplers). Not a lot of difference, but an inch here and there really counts when space is this tight.

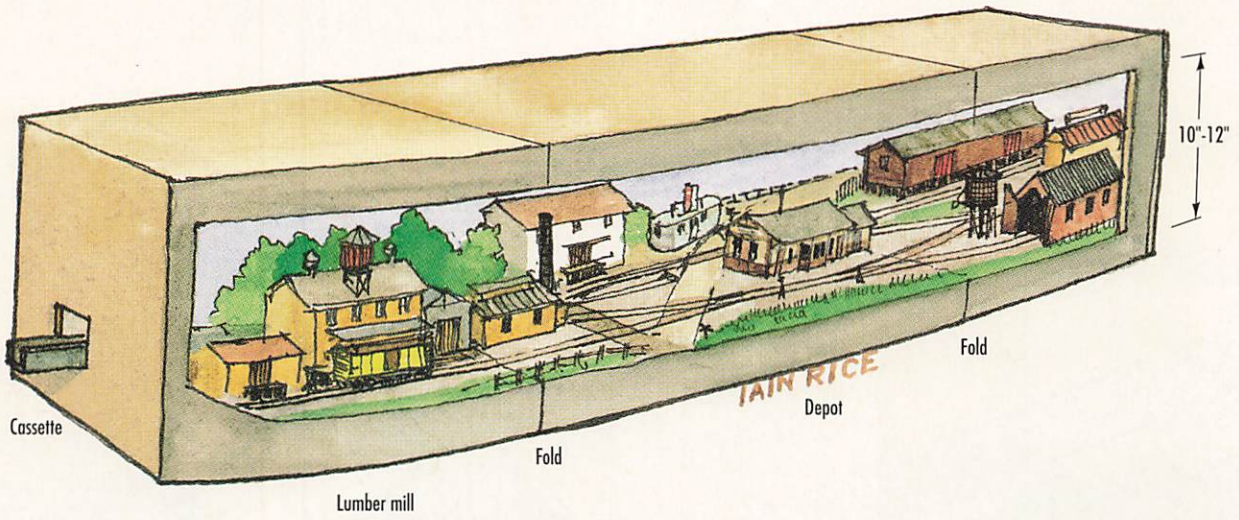
In N scale, things aren't quite so critical. A normal 40-foot car is the same 3½" as the shortest of HO cars, while a mainline diesel like an F unit spans but 4". Even a steamer such as Bachmann's popular 2-8-0 just breaks the 6" mark.

So, with my baseline rule-of-thumb suggesting that a maximum train length would be between 18" and 24" on a six-foot layout, the possibilities looked like this: In HO, a GE 70-tonner or 0-6-0T switcher plus two 36-foot cars and a caboose (4" x 5¼"=21") is right in the middle of my criteria. Substitute a four-wheel caboose and one or both cars could be longer. Go for ore jimmies and a bobber and you get an extra car. In N, the same 21" length gets you the 2-8-0 plus three 40-footers and a 36-foot caboose with space to spare – or the possibility of including a longer car or a passenger coach in the consist.

Go down to a diesel switcher or up an inch or so in train length and you get an extra car; stick with the basic three-and-a-caboose and you can shorten your fiddle yard to a bit over 19". Wow, another two whole inches of modeling real estate!

Themes for short trains

Having come to the conclusion that my train could be no longer than 24", I now needed to develop a theme where such modestly sized trains wouldn't look out of place. I've always been a shortline buff, so I looked for prototypes where short trains of short equipment ran over short distances. The two I came up with are quite disparate but equally attractive.



Quincy RR in HO

Short lines don't come a lot shorter than the Quincy RR in California, all of three-and-a-half miles long. It connected with the Western Pacific at Quincy Junction and ran up a side valley to serve local fruit-growing, lumber, and pulpwood interests; the fruit packing company owned it.

If you feel you have the Quincy somewhere deep in your subconscious, that's probably because Campbell Scale Models patterned several of its structure kits after Quincy RR originals, and even offered a "module" kit based on the terminus, which is a definite bonus on the structure-modeling front. The other plus is that Quincy motive power around 1950 was an old 0-6-0T steam switcher and a shiny new GE 44-tonner. Perfect!

The design drawn here isn't an accurate reproduction of the real Quincy RR, because the real track plan was very long and narrow and would never fit on a 1 x 6-foot site. So what we have here is something in the spirit of the Quincy, borrowing the name, location, structures, basic roster, and character but taking liberties with other aspects.

Learning points

- Thinking small embraces everything from the layout's footprint to the equipment that runs on it.
- Don't model what you can stage or fiddle, such as a wye or turntable.
- If you can't find an exact match for a key locomotive type in your price range, look for a reasonable substitute; change prototypes, scales, or eras; or hone your kitbashing or scratchbuilding skills.

The plan is designed around the Peco code 75 track system, which has a small rail section that's appropriate for a shortline layout and, more importantly, includes a nice 24"-radius wye turnout that I've used here to save length on the runaround track.

A wye turnout is the shortest formation of any given radius, and the Peco no. 1197 wye is a tad under 6" long overall – the better part of 1½" shorter than a normal no. 4 left- or right-hand turnout. Again, where every inch counts, that's not just a worthwhile savings but a vital one.

To augment the switcher (steam or diesel) used on the freights, this is a railroad that could make real good use of Walthers' 60-foot gas-electric for hauling passengers. Obviously, there's no turntable to reverse the unit on a tiny layout like this, but a bit of subterfuge overcomes this snag: the use of an "offstage" (and quite imaginary) wye for turning, represented by a short cassette in the fiddle yard that will neatly take the gas-electric and is easily hand-turned.

Otherwise, there's nothing particularly remarkable about the Quincy. The facilities and structures are what you'd expect on a back-country branch line: a small freight depot, team track, shed for the section crew, a one-stall engine house, and a spur serving the fruit packing warehouse. The railroad's old depot building serves more as the agent's office than for the needs of the few passengers.

Marianna & Blountstown in N

I found this gem of a railroad in the pages of Beebe and Clegg's immortal *Mixed Train Daily*, the shortline buff's bible. It was one of a group of Southern short lines, mostly in the Alabama-Georgia-Florida triangle, that stuck to steam (in many cases, wood-fired locomotives!) into the later 1950s.

The track plan bears some resemblance to the prototype, as I found a photo showing nearly the whole layout of its Blountstown, Fla., terminus.

The traffic on this picturesque line – which ran through the woodlands of the Deep South – was lumber, cordwood, and turpentine root, plus general merchandise. The mail and passengers rode in an old combine tacked onto the end of the freight cars, which rarely numbered more than six.

Like most of these short lines, the real M&B relied on an elderly 4-6-0 for motive power. Bachmann now has a Baldwin 4-6-0 in HO, and I bet they'll do it in N as well. But my version of the M&B could get by nicely on Bachmann's N scale 2-8-0, another common mixed-duty shortline engine.

Otherwise, all you'd need are a half-dozen flats, a gondola or two, and a brace of boxcars, plus maybe a tank car for turpentine oil. A crummy would be optional; the old combine did that job as well.

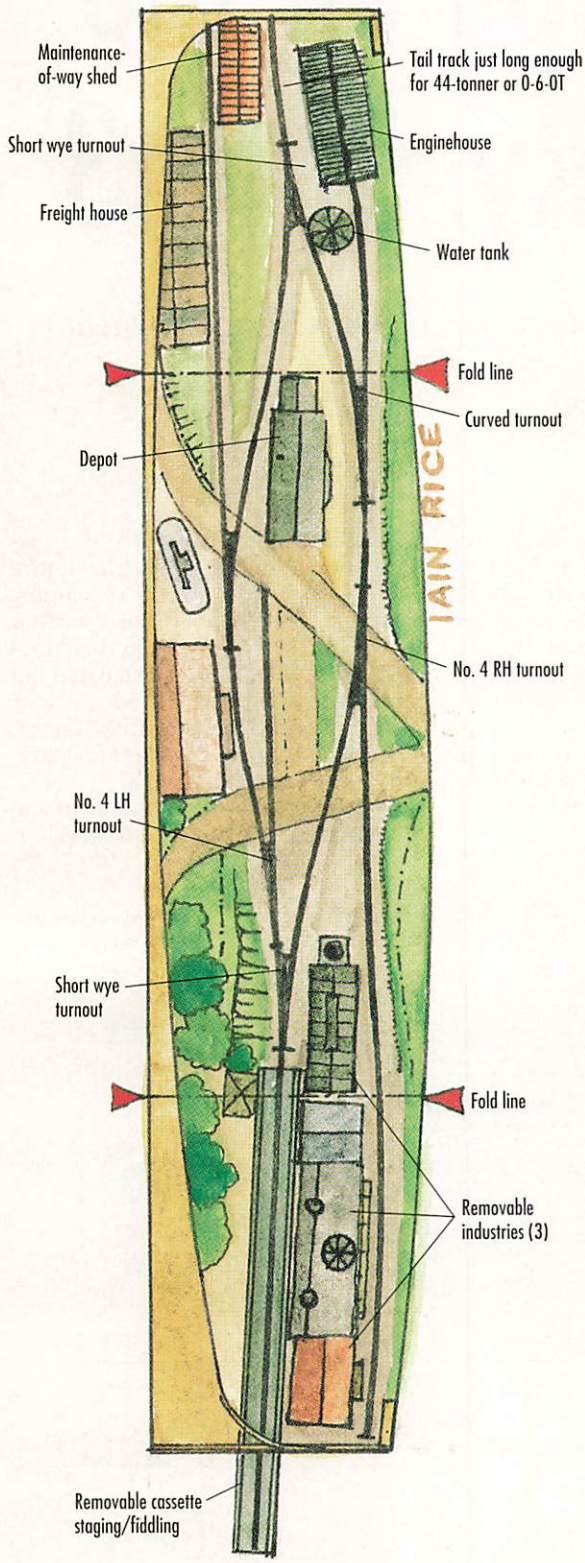
Conclusion

These two tiny layouts are primarily designed to look good and to offer limited but interesting operation. They are self-contained, with everything stowing in a box that folds to 1 x 3 x 2 feet high, making them easily portable and capable of being housed just about anywhere – truly minimal model railroads! MRP

Iain Rice, a resident of the United Kingdom who travels extensively in North America, is a regular contributor to MRP and parent publication Model Railroader. *Iain is also the author of* Small, Smart & Practical Track Plans, *published by Kalmbach Books.*

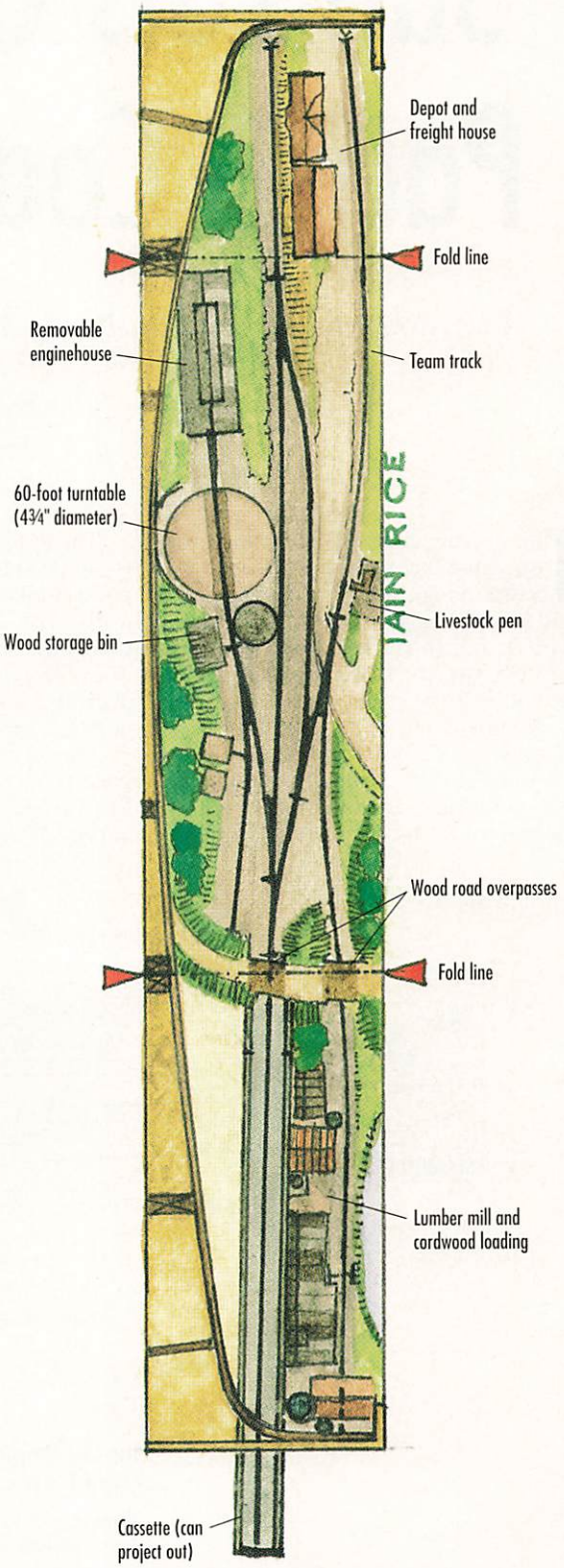
QUINCY RR IN HO

Peco code 75 turnouts and flextrack



BLOUNTSTOWN, FLA., IN N

Peco code 55 track with medium turnouts



San Luis Obispo on the Pacific Coast Ry. in Nn3

A key town near Santa Barbara, Calif., is the basis for a Layout Design Element

By Tom Knapp
Photos by the author

The narrow gauge Pacific Coast Ry. operated in California between Port San Luis (originally Port Harford) and Los Olivos just north of Santa Barbara. It ran through Avila Beach, San Luis Obispo (the PCR's main terminal), and other rural stops.

A subsidiary of the Pacific Coast Steamship Co., the PCR operated from 1871 until it was dismantled for scrap during World War II. Most of its equipment went to the White Pass & Yukon.

The PCR's compact San Luis Obispo terminal was well documented in two good books: *Ships and Narrow Gauge Rails: The Story of the Pacific Coast Company,* by Gerald Best, and *Pacific Coast Railway – California's Premier Narrow Gauge,* by Kenneth Westcott and Curtiss Johnson.

The layout plan shown here is based on a town plat in the latter book. Curtiss also gave me a CAD file of a survey of this area.

San Luis Obispo in Nn3

Without compression, the entire San Luis Obispo terminal (excluding the coal and lumber yard farther north) can be modeled in 30" x 84" in N scale. That would be manageable but far larger than the 1 x 3-feet, plus wings, allocated for a bookcase layout.

To fit "SLO" into the allotted space, I made several adjustments:

• The two sidings by the main and warehouses were reduced to one.

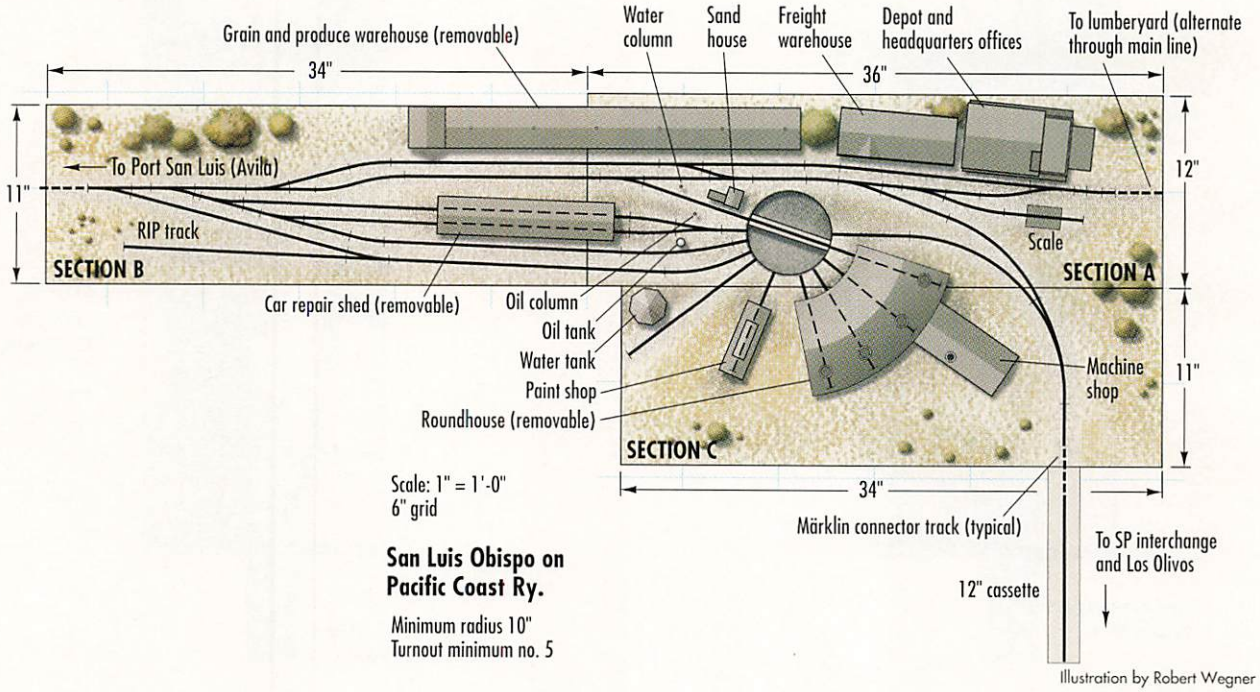
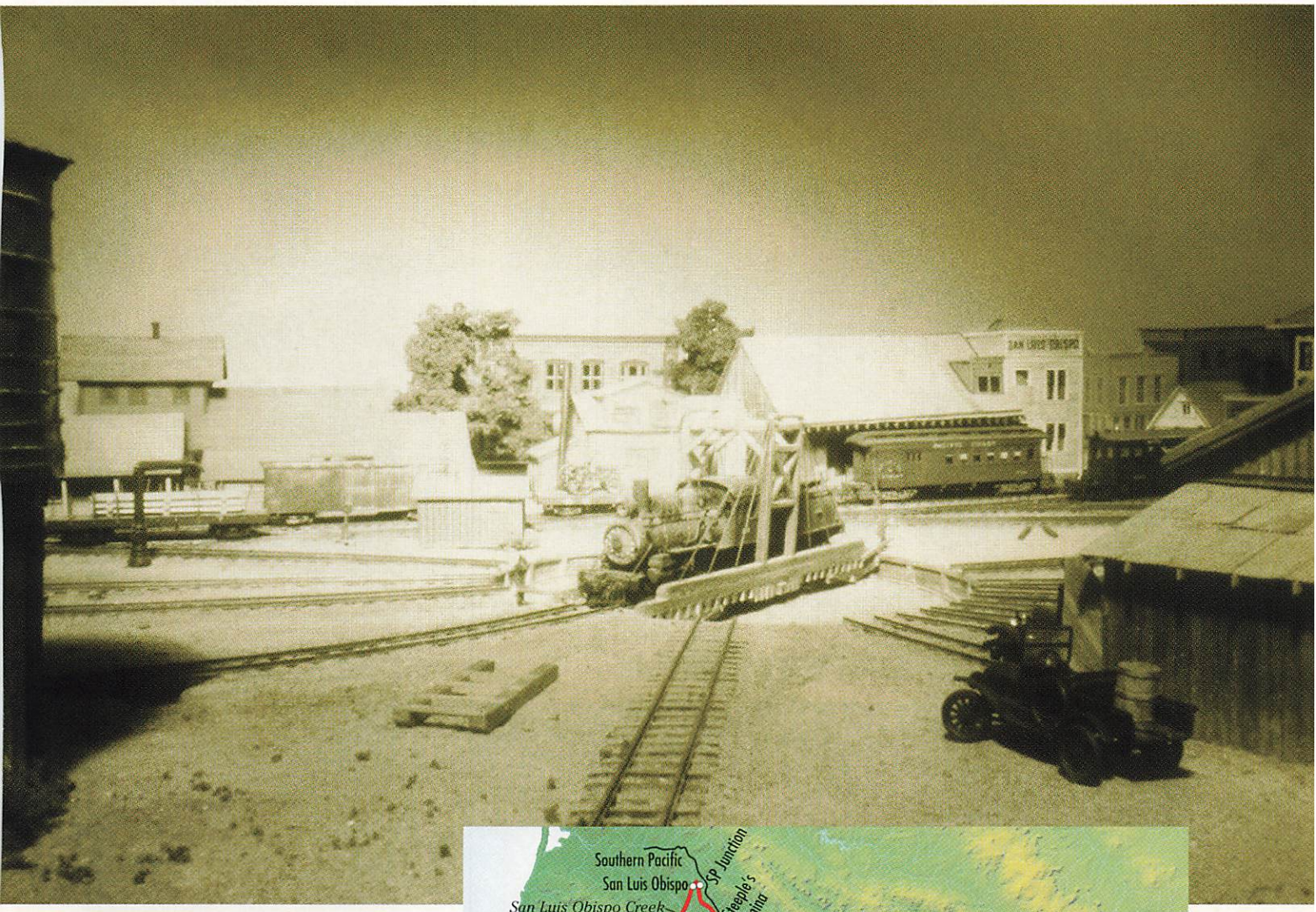


Illustration by Robert Wegner



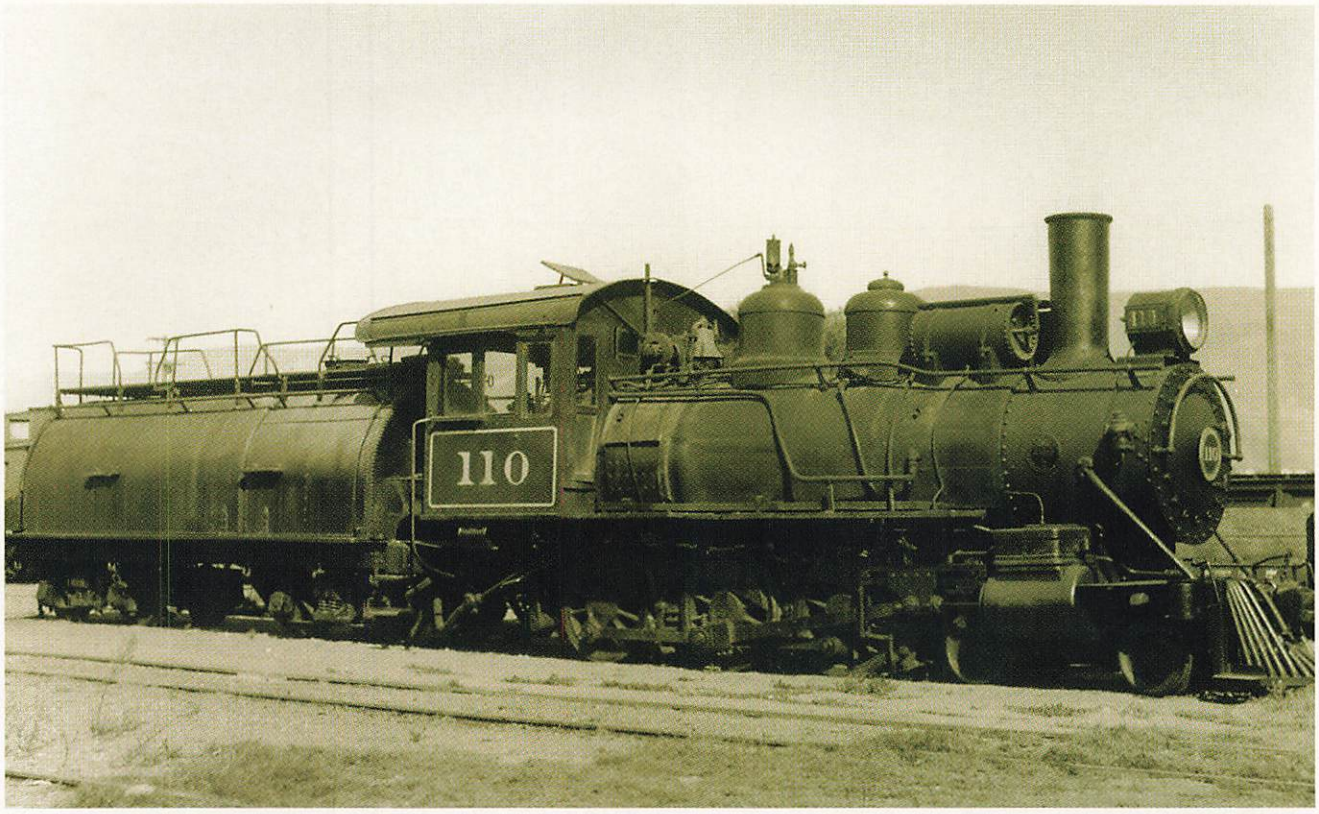
This view of author Tom Knapp's former Nn3 layout based on the Pacific Coast Ry. looks toward the depot with the roundhouse at right with no. 110 on the turntable.

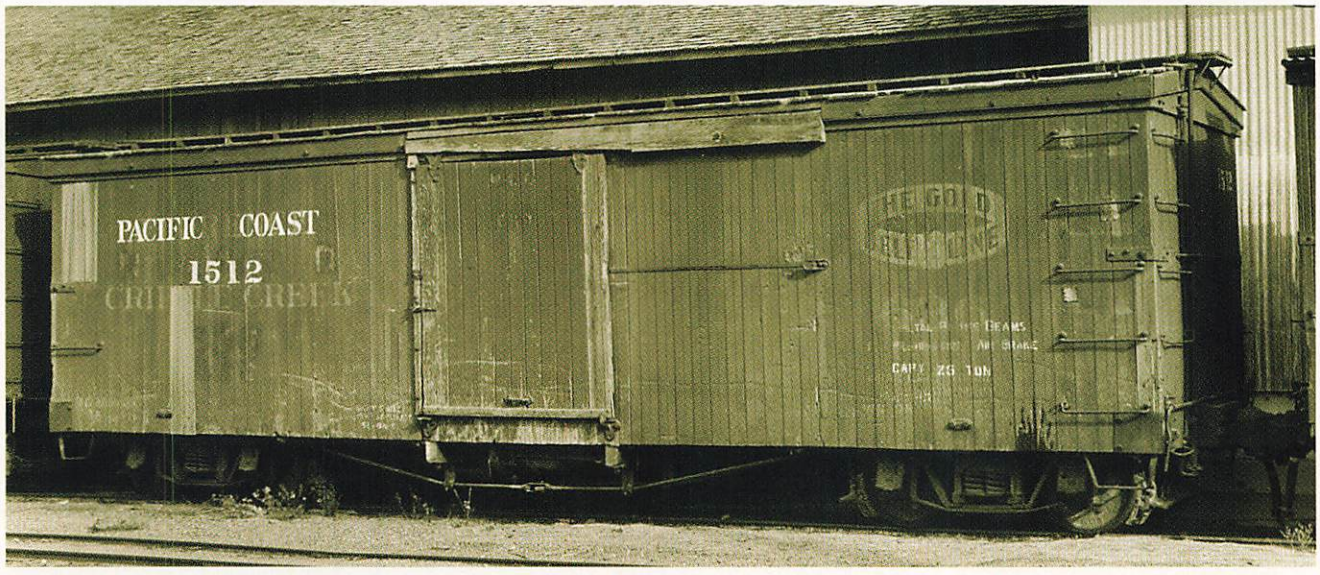
- The car-repair shed was reduced from three to two through tracks.
- The RIP (repair in place) track was retained, as it was busy in the between-wars era and even had the remains of trains wrecked for movies, but I reversed it and ran it south of the repair shed instead of parallel to it.
- The second runaround to the east of the car repair shed was eliminated.

The plan includes folding extension tracks aligned with each of three Nn3 oNetrak modular interface points. They can also serve as fiddle tracks.

The SLO layout can therefore be attached to modules built to oNetrak standards by using a Märklin 8592 stretching connector track. And it's a Layout Design Element (LDE) in that it accurately depicts the Pacific Coast Ry. in San Luis Obispo.

Illustration by Rick Johnson





These four photos show, from **lower left**, boxcar 1512, a hand-me-down from the Florence & Cripple Creek; Pacific Coast Ry. Ten-Wheeler 110, a 1910 Baldwin built for the Nevada-California-Oregon; Consolidation 105 at the SP depot in San Luis Obispo around 1937; and Pacific Coast caboose 2, since restored for display in Sacramento.

Learning points

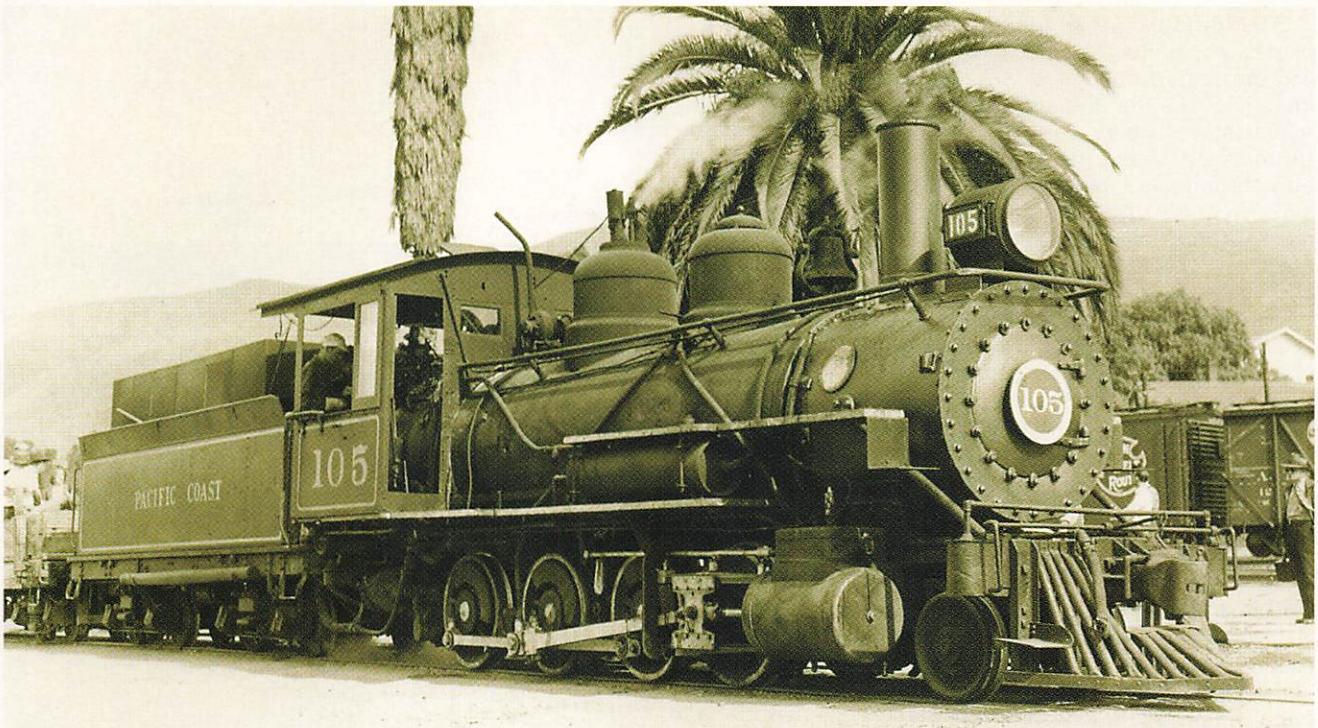
- N scale narrow gauge (Nn3) is based on commercial Z scale components.
- By choosing a small scale, even a very small layout section can be a Layout Design Element representing an actual location.
- Even a tiny bookcase layout can be built in sections as time and other resources permit.

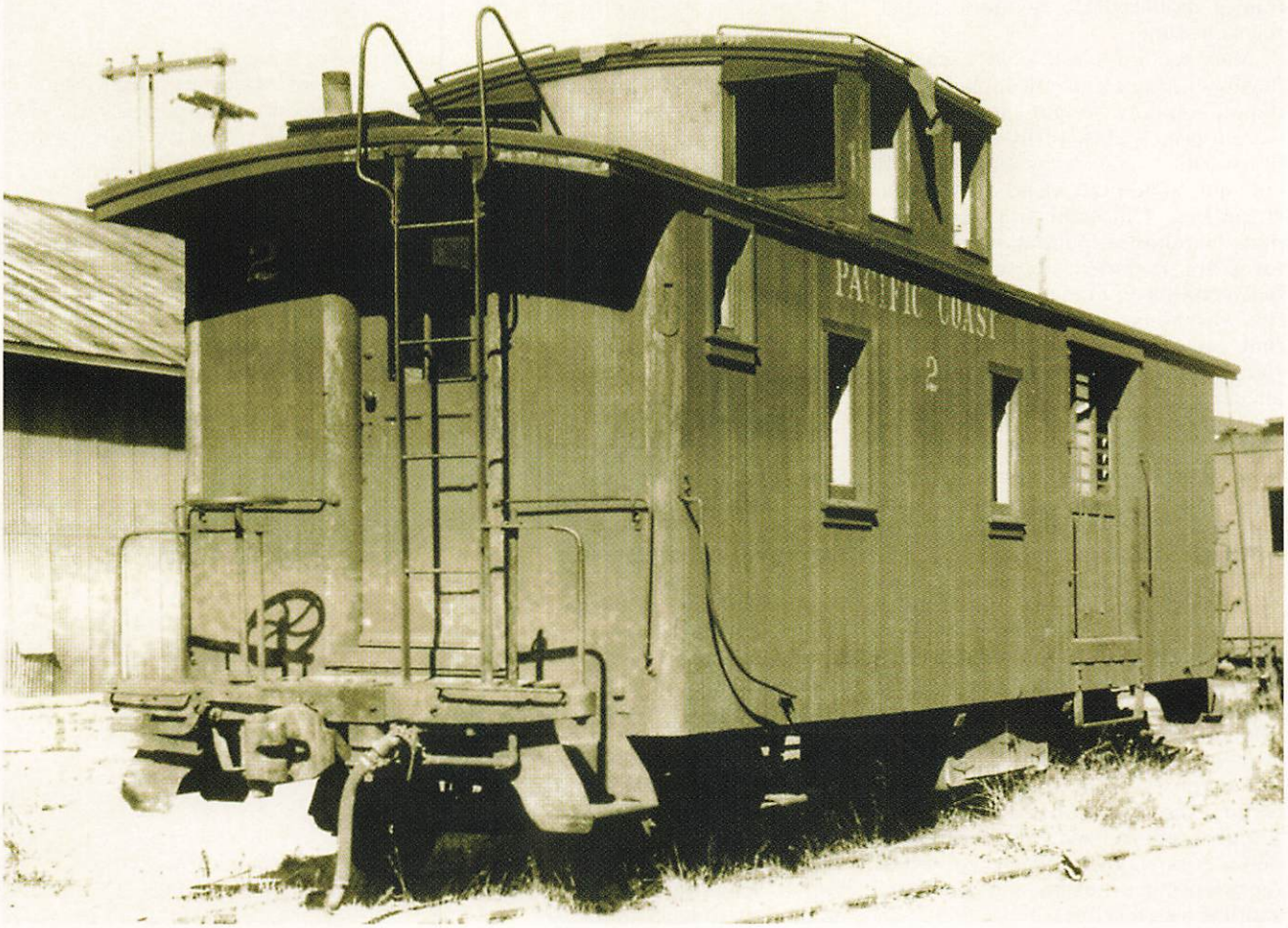
From Z to Nn3

Just as HO modelers use N scale track and mechanisms to model narrow gauge in HOn2½, N scale modelers use Z scale products to model narrow gauge railroads in Nn3.

Micro-Trains produces a line of ready-to-run Nn3 boxcars, gondolas, and flatcars, and initially offered gondolas and flats lettered for the Pacific Coast. Republic Locomotive Works sells decals for the railroad.

My locomotives are made from Republic's Nn3 conversion kit superstructures on Märklin Z scale chassis. The RLW kits, which include the Pacific Coast's frequently photographed 4-6-0s, include white-metal castings and brass etchings.


PACIFIC COAST
105
105
105


PACIFIC COAST
2

The turnouts are all no. 5s, so the plan can be built with any commercial Nn3 turnouts in codes 40, 55, or 60, including Märklin Z gauge turnouts. Aspen Model offers code 40 and 55 turnouts on stained wood ties. Rail-only turnouts are available from RLW and BK Industries. Flextrack with nicely proportioned and spaced ties is made by Peco, and Aspen has narrow- and dual-gauge sectional track.

Six tracks cross the joints between sections. For overall rigidity and precise alignment between adjacent sections, the framing (baseboard) for each section should be made from extruded aluminum picture-frame material and ⅛" tempered hardboard. Adjacent sections should be aligned with metal dowel pins and locked with trunk latches or machinist's lever clamps.

Building in stages

The layout could be built in stages as a series of LDEs as time and finances allow, or it could be built by three different modelers, one per section. The tracks crossing between sections should be laid with the baseboards locked together to ensure alignment, however. And all three aluminum frames should ideally be fabricated at the same time.

Main section A is 12" x 36", sized to fit atop the bookcase. It includes the depot, offices, freight shed, small warehouse, scales, turntable, roundhouse lead tracks, water and oil columns, sand house, and a few other structures. The main grain and produce warehouse foundation and platform are included up to the joint between this and the next section, but the warehouse is a lift-off structure that spans the two sections. The roundhouse superstructure and open-air car-repair shed are similarly positioned across a joint.

The second section, B, is 11" x 34" to fit on a lower shelf. It includes the car-repair shed, grain warehouse, ladder track, and RIP track. I also located a boiler house here.

The third section, C, also measures 11" x 34". It includes the roundhouse, speeder shed, paint shop, section boss's office, and a track to the Southern Pacific interchange. My N scale model of the roundhouse was named "Model of the Month" in the June 1980 issue of *Model Railroader* Magazine.

Sections A and B could be used without the roundhouse and the track to the Southern Pacific interchange. A one-section layout fed by cassettes representing trains to and from the south is also feasible.

CROSS-SECTIONS

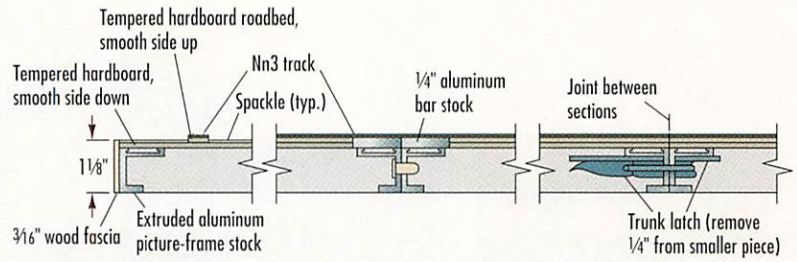


Illustration by Rick Johnson

Operation

Operations varied over the years but were down to one mixed train per week by 1934. The railroad was at its zenith in 1913, when four trains departed from or arrived at San Luis Obispo between 6:30 a.m. and 6:05 p.m.:

- 6:30 a.m. – eastbound passenger train departed for Orcutt.
- 9:10 a.m. – eastbound freight departed for Santa Maria.
- 10:45 a.m. – westbound passenger train arrived from Orcutt.
- 11:15 a.m. – westbound mixed train departed for Port San Luis.
- 1:10 p.m. – eastbound mixed train arrived from Port San Luis.
- 2:20 p.m. – westbound mail and express arrived from Los Olivos.
- 2:45 p.m. – eastbound mail and express departed for Los Olivos.
- 6:05 p.m. – westbound freight arrived from Santa Maria.

Railfan excursions and movie-making trains operated during the '30s. Number 4000, the rail truck rebuilt from a 1914 Model T Ford, made infrequent trips to Port San Luis. Other extra trains included flatcars to Port San Luis to pick up fresh-cut lumber from coastal schooners; this would be routed to the lumberyard just north of the San Luis Obispo yard. An occasional train of tank cars made the trip from Cat Canyon Field near Santa Maria through San Luis Obispo to small oil tankers at Port San Luis.

For scenery, I recommend using a dirt-tan color of pre-tinted, pre-mixed Synkloid spackle, which is flexible and resists chipping and cracking. A 14" x 70" x ⅛"-thick backdrop depicting San Luis Mountain and the volcanic range that parallels Higuera Street (and now Highway 101) could be stored behind the bookcase when not in use.

Expanding the empire

There may come a day when these layout sections can become part of a larger, more permanent Pacific Coast Ry. layout. If so, the extensive coal and lumberyard to the north could be added as another Layout Design Element. Other LDEs could extend south to Port San Luis and include the wharf, turntable, yard, and hotel there. Other extensions could head east to the Southern Pacific interchange, itself an interesting LDE theme that could be built as an Ntrak module, and beyond all the way to Los Olivos. MRP

Tom and Patricia Knapp live in San Francisco, where he is an architect. He began "playing with trains" in the 1950s when he received a Marx train set. He gravitated to HO, N, and finally Nn3 in 1972. Two years later, one of Tom's steam locomotives won the first National Model Railroad Association national blue ribbon awarded to an Nn3 model. His other hobbies include restoring and racing vintage race cars.

Clinch River on a bookcase

An N scale Appalachian coal hauler featuring lots of operation

By Phillip Brooks
Model photos by the author

Mikado 12 is serviced before beginning the morning chores in the twilight years of steam on the Clinch River RR. This area, built to test scenery techniques for the author's 18 x 24-foot layout, is similar to the bookcase plan.

When I first learned of the bookcase dimensions for this planning exercise, I wondered what kind of railroad would fit into such a small space – a harbor layout with a car ferry? An industrial switching layout? Maybe a complete narrow-gauge layout in Nn3?

Then I hit on a different approach. Instead of wondering what type of generic model railroad would fit on a bookcase, I asked: What would I build if that were the only space I had?

I then set about the task of squeezing my garage-size N scale plan to fit the bookcase dimensions. But where to start? A closer look at my freelanced prototype showed me how to trim the nonessentials while keeping its purpose and basic operation.

Meet the Clinch River

Understanding the concept of the Clinch River RR (CR) is rooted in its name. Set in the Clinch River Valley of eastern Tennessee and southwestern Virginia, the CR serves as a bridge line between the Southern at Lone Mountain, Tenn., in the south to Speers Ferry, Va., in the north, where it connects with the SR and Clinchfield rail-

CLINCH RIVER IN N SCALE

Scale: 1" = 1'-0" 6" grid

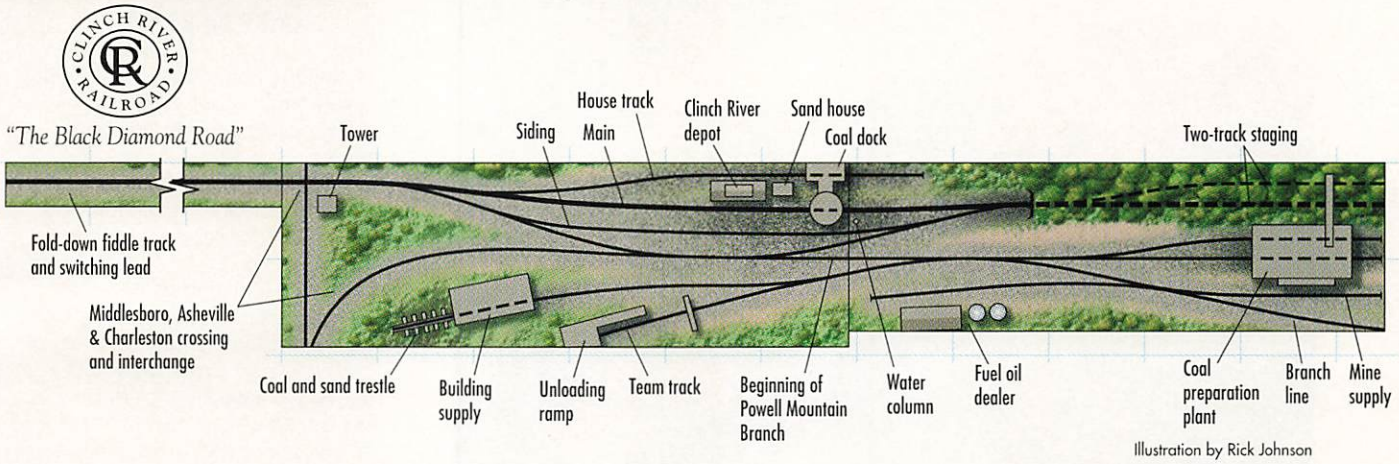


Illustration by Rick Johnson

roads. A reality check was provided by another pair of mountain railroads, the Interstate and the Virginian, which I researched to learn prototype operating practices I could emulate.

Dragging coal out of the Appalachians to its connections is the railroad's main purpose, but other products such as tobacco and pulpwood provide outbound loads as well. Inbound shipments include general merchandise, construction materials, oil and gasoline, and farm machinery.

About midway along its route, the Clinch River crosses and interchanges with another free-lance railroad, Jim Collier's Middlesboro, Asheville & Charleston (MA&C). The MA&C ships raw coal shipments to a coal preparation plant on the CR and receives cleaned and sized coal. A nearby branch splits off the main to form the Powell Mountain Branch, which serves mines up in the "hollers" and supplies more raw coal for the prep plant.

Because of all this potential for operation, the MA&C interchange and the Powell Mountain Branch logically become the focus of the bookcase track plan.

Construction ideas

This plan is N scale and is designed using Atlas code 55 flextrack and matching no. 5 turnouts for more realism and smooth operation. Because the plan is so small, all turnouts are easily reached from the front. This allows the builder to choose between remote or hand-thrown turnouts to suit preferences and budget.

The central benchwork would stay permanently attached to the top of the bookcase, with a fold-down fiddle-track/switching lead off to the left. The right-hand side of the plan is sized to detach and rest on another shelf when not in use. Track joints would butt together, or short bridge tracks with movable joiners could be used as in Ntrak practice. Digital Command Control would offer the simplest and most flexible control. All tracks could be wired to a central power bus, simplifying wiring connections between the moveable sections.

The hidden staging track and main line inside the mountain need access openings in the back to clean track or retrieve derailed equipment. Strong, lightweight foam scenery would be a good idea, as a top-heavy bookcase might be unstable. Heavy reference and text books will serve as ballast while camouflaging the fact that you really read only books that have to do with trains.

Locomotives and rolling stock

First off, short layouts mean short tracks, which mean short trains, which mean short cars. Luckily, I model the late-1950s steam-to-diesel transition era, when the majority of cars and locomotives were reasonably short.

The CR uses steamers as well as diesels, but tenders take up space when switching. Small diesels are therefore recommended. To minimize the visual effect of short trains, operations focus on locals rather than handling long through freights. We can do this by simply modeling the time of day after the long through trains have already run or have yet to arrive.

Another device to enhance operations is a dedicated branch switcher. This is a small locomotive, either a Life-Like SW1200, a Kato RS-2, or an Atlas GP7, stationed on the house track. Its job is to handle all local switching of cars that are dropped off and picked up by the passing mainline trains. This is prototypical – busy processing plants may need to be worked several times a day.

"Terminating" trains

An operating session could keep two to three operators busy, with one person serving the role of a combination conductor-switchman and the other position(s) filled by engineers. A dispatcher isn't necessary on a layout this small, but the job could keep someone reasonably busy writing train orders and controlling the main track.

The session would start with cars spotted at each industry, including cuts of cars on the interchange track and on the main siding. A local with caboose is staged on the long hidden staging track. The other hidden staging track holds an RDC or gas-electric to provide local passenger service.

One operator starts the session by running the local onto the layout and exchanging inbound cuts of cars on the main siding for the staged outbound cars. After completing the swap, the local proceeds to the diamond crossing with the MA&C, where it either stops or proceeds depending on the signal indication there. Because the MA&C is a dummy crossing, the signal can be controlled by an electric switch, by the dispatcher, or by a random timing device. The local proceeds from the scenicked part of the layout to end its run on the fiddle track, where it would be "terminated" – taken off the track and stored.

At this point, the switcher is free to cross the main and begin its work. Again, it must cross the diamond only when signals indicate it is clear to do so. The little lulls waiting for the signal to clear will add variety to mainline movements. Before it's parked for the night, the switcher's last job is to place all outbound cars on the main siding and spot any remaining cars on the depot house track.

At an appropriate time, the RDC staged on the short hidden track

The North Local's crew picks up a boxcar from the mine supply track.

Alco RS-2 no. 22 eases up to a westbound manifest's caboose on the main line as it prepares to shove the through train up the Clinch River's formidable Blackwater Grade.

Learning points

- Redesigning a large layout to fit in a very small space makes priorities clear and challenges existing perceptions.
- Identifying key industries in the modeled region and era is an important step to consider early in the design process.
- Adding a branch or industrial switcher creates another "job" and adds interest to operations.
- Thinking in terms of switching "coal" is too general; each track under a prep plant is for loading a different size of coal to serve a specific market.

enters the layout on timetable authority. It stops at the station, waits to unload and load mail and passengers, then crosses the diamond and terminates on the fiddle track.

Loads, empties, routing

Car forwarding is a personal choice and can be handled by switch list, car cards, or by a simple tab-on-car system like we use at our local Ntrak club. The tab system has a number for each car destination written on a small section of ¼" Plastruct H-beam and a color on the other side representing east- or westbound. The car is delivered to the number destination, then the tab is immediately turned over to display the east- or westbound color. The next movement picking the car up will route it east or west accordingly.

It's easy to tell whether open cars are loaded, so care usually must be taken to route them logically – not sending loads to tipples. However, the coal tipple on this plan represents a processing plant where mine-run coal is washed and sized for outbound shipment. This sounds like cheating when loads and empties alike can be shipped inbound to the tipple. But the difference between dusty-looking raw and clean prepared coal is visually discernible. Thus the coal cars may be handled in three ways – unwashed loads, washed loads (which can be further sorted by coal size), and empties.

The destination breakdown goes something like this: The main siding receives cars bound for all tracks. The coal processing tracks receive empty and mine-run coal cars spotted above the prep plant for gravity loading or unloading. The mine supply track receives boxcars of machinery and flats or gondolas of timbers and pipe.

The MA&C interchange track provides inbound raw coal for the prep plant and receives prepared coal in return. It also provides occasional merchandise cars for the team track. The team track receives flats with machinery (spotted under the crane) and boxcars for the loading dock. The building supply receives boxcars and covered hoppers of gravel or sand at the supply trestle. The fuel oil dealership receives tank cars and boxcars with 55-gallon drums of lube oil products. All industries generate empties for shipment offline, except the prep plant, which generates clean coal loads.

What I've learned

This has been an interesting project for me. It has challenged some of my preconceptions – I would not have believed that a layout this small could provide so much scenic and operating potential. It's also comforting to know that the kind of railroading I like can be modeled in a small space. MRP

Phil Brooks is a graphic designer and model builder in Knoxville, Tenn., where he lives with wife Penny and daughter Mae. He's active in the Knoxville Area Model Railroaders group and credits friend Jim Schall for much of the progress on the CR.

HO "finescale" test bed

A trial layout section for Proto:87 standards – and a nice switching pike to boot!

By Mario Mateo

This small layout section is more than a proposal: I'm actually building it as a test bed for a basement-size Proto:87 model railroad – a layout that is built using near-to-prototype wheel and rail standards in HO scale. [See "Keeping it simple" by René Gourley in MODEL RAILROAD PLANNING 2001 – *Ed.*] It's better to learn what works and what doesn't on my test section while I can still make changes in the main layout.

For the MRP design exercise, I simply made a few adjustments to the original plan to allow the foot-long piece on the left end to hinge down, thereby meeting the 1 x 3-foot bookcase requirement.

Honing needed skills

Beyond using this as a test bed for equipment operation and clearances, it also provides a platform to practice my tracklaying skills and try different techniques. Since I already have considerable experience in handlaying Proto:87 turnouts, I added a diamond (crossing) and a scale track to the design – delicate items that require more finesse. This is also my first experience handlaying both code 55 and 70 rail, and in keeping with the prototype, I'm even cutting the rails into 39-foot or shorter lengths!

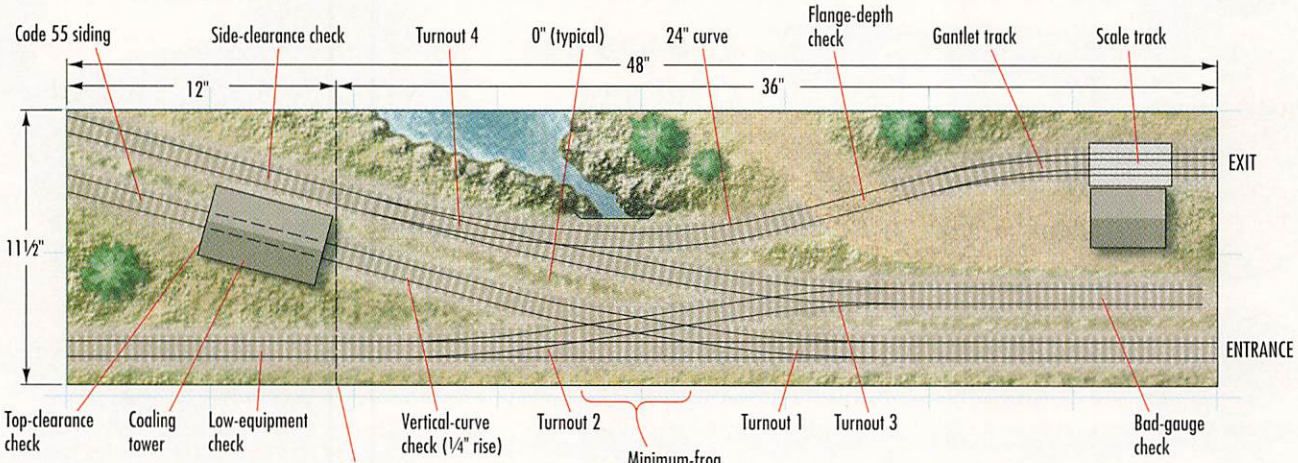
To understand the design behind my test-bed layout, you need to know a little about my main layout.

The setting is the Skagit River region of Washington between the late 1930s and 1941. I chose this period so that I could run short freight equipment. A Bachmann 44-tonner or small tank engine would work well if you use my plan as a small switching layout. With these things in mind, the minimum length for each lead should be at least 10" long; however, I've extended all leads to 13" or longer, so I can test short passenger cars too.

Testing equipment

To visualize how I'll use this track arrangement as a test bed, imagine a locomotive sitting on the lower-left track and the car to be tested at the lower right at the spot labeled "entrance." The following tests are then performed:

- Engine couples to car to check coupler height using carefully aligned locomotive coupler as a gauge.
- Engine pulls car back through turnouts 1 and 2 (one facing and one trailing point) onto low-equipment test track to check clearances.
- Engine then pushes car back to entrance track through facing and trailing points.
- Turnout 1's switch points are set for diverging route. Engine pulls car through turnout as a test of its ability to negotiate a no. 5 frog, the minimum turnout on my main layout.
- Car is pulled across the crossing, then up a short ramp to ensure couplers stay coupled while passing through two vertical curves.
- Engine then pushes car down the incline to the entrance track through minimum-frog turnout.
- Turnout 1 is set for straight route, and car is pulled back to the low-equipment track. Turnout 2 is set to its diverging route, and the car is pushed through it and across the diamond, then pulled back to the low-equipment track again. The car has now been pushed and pulled through minimum-frog turnouts with both facing and trailing points.
- Car is pushed to the "bad-gauge" track, which is laid at both minimum



Proto:87 test bed
Scale: 1½" = 1'-0"
6" grid
Code 70 rail except where noted

Illustration by Rick Johnson

Learning points

- Building a test bed can resolve concerns and identify potential problems before they migrate wholesale into a larger project.
- A test bed provides the opportunity to hone tracklaying skills and techniques.
- Building scenery and structures for a test layout provides a change of pace from basic carpentry and wiring chores when preparing to build a main layout.

and maximum allowable gauges, and wheels are checked for any tendency to derail.

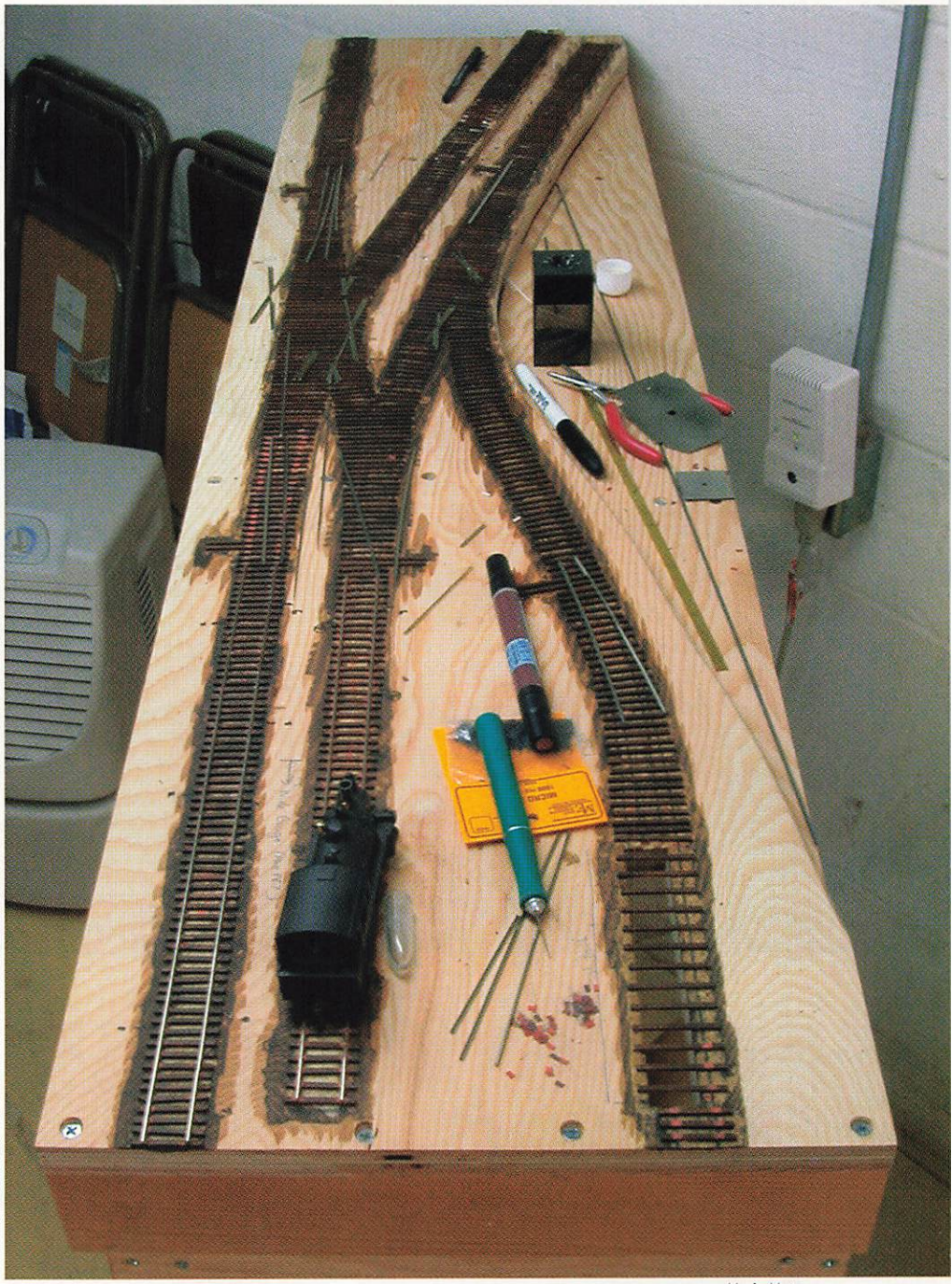
- Turnout 3 (a wye) is set for its other route, and car is pulled to the side-clearance track. Car must not touch any items placed along this track at the prototype's minimum horizontal clearance distance.
- Turnout 4 is set for the diverging route, and car is pushed through a 24"-radius curve, the minimum radius on the main layout. This could be a tricky spot for new locomotives to negotiate and is a major source of concern for the main layout – another reason to build the test bed.
- The grade crossing serves as a test for flange depth; if a car or, especially, a locomotive rides up, its flanges are too deep. The grade crossing, turnout frogs, and diamond will also provide tests for wheel back-to-back distance – a problem I have discovered with some P:87 wheelsets.
- The car is pushed to the right-hand route of the gantlet track to a car-weighing scale. Eventually, I plan to make this track free-floating to weigh cars as described by Jim Ferenc in his article "Build a working track scale" in the August 2000 issue of *Model Railroader.*
- Last, the car is pulled back, the switch thrown to the other side of the gantlet, and the car officially exits test layout. The car is turned around to check the coupler height on the other end and to put it through its paces in the reverse direction.

Of course, these movements and checks will normally occur in less time than it took me to describe them. Once you've tested a few cars, the process should quickly become routine and easy to follow.

Final considerations

For the test bed to provide accurate data, it will require precisely laid track – again proving the need to practice my tracklaying techniques before starting my main Proto:87 layout.

This small test bed also will serve as a place to experiment with scenery techniques. The drainage area from the culvert under the tracks provides some change in elevation for scenic interest. Beyond its flange-checking function, the grade crossing is part of an access road to the weighing station. Last but not least, the several structures offer some interesting modeling opportunities, providing a diversion while I finish preparing the layout room and start the benchwork. MRP



Mario Mateo

In this view of Mario Mateo's Proto:87 test bed, the author has made a good start handlaying the track. The locomotive in the foreground, however, seems to have failed its tolerance test.

Mario Mateo is a professor of astronomy at the University of Michigan. He and his wife, Nancy, have two children. His current large-layout project, the Cascade Range RR that is "nearly" Proto:87, is his fourth. Mario also enjoys woodworking, biking, and playing hockey.

Pacific Electric Magazine/David P. Morgan Library

Bookcase plans | 7

Pacific Electric express terminal

A compact traction terminal provides a variety of action in HO

By Trevor Marshall

A photo in the May 1996 *Trains* Magazine, reproduced here, inspired this 1 x 3-foot bookcase plan for the Pacific Electric's express terminal at the Los Angeles Union Passenger Terminal (LAUPT). The photo dates to the mid-1940s, rather late for such intensive interurban action.

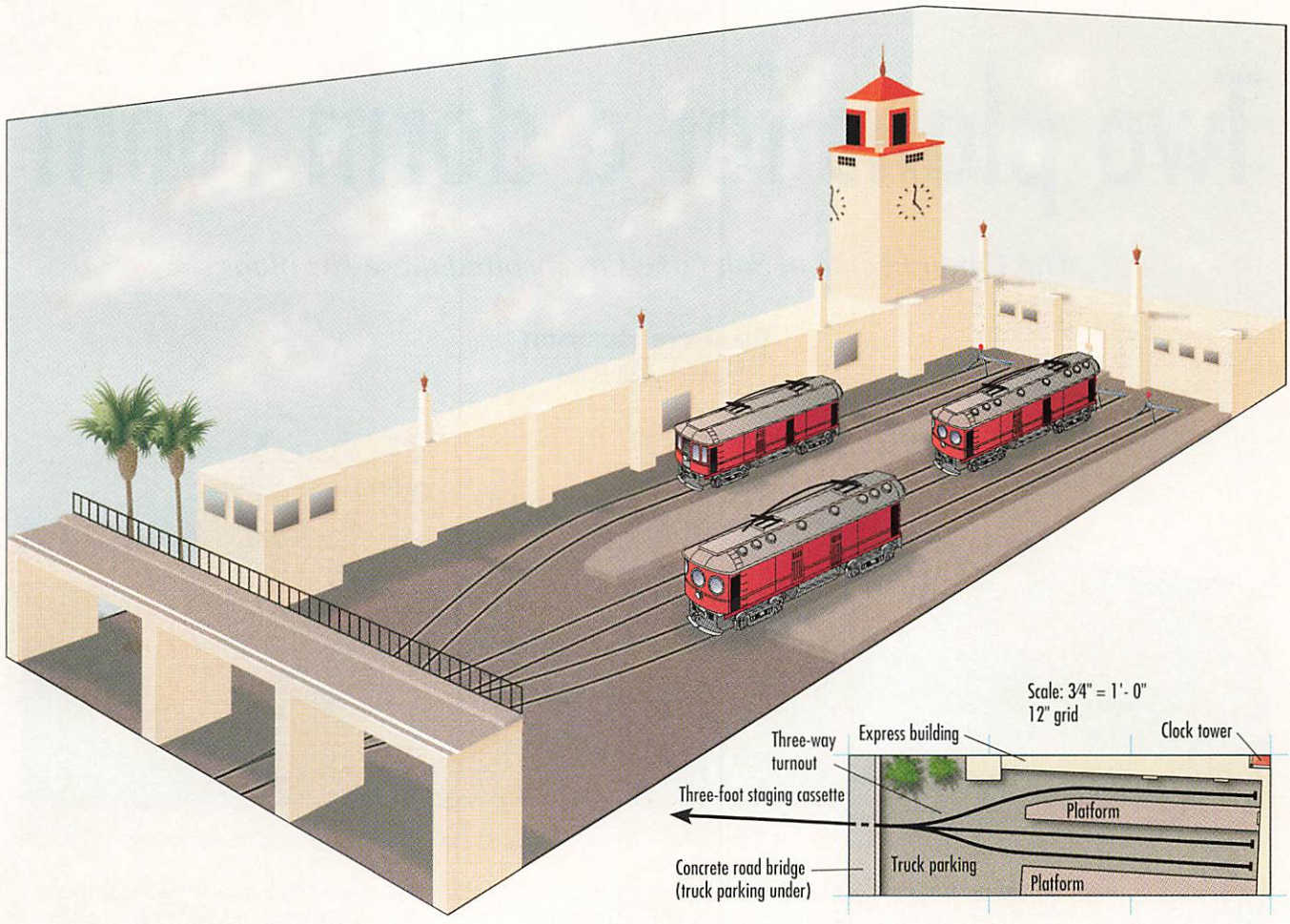
As the photo caption noted, "PE had a fleet of box motors for its brisk LCL (less-than-carload lot), mail, and express traffic, which flowed from three terminals in central L. A. to all corners of the system. . . . No fewer than nine box motors jam the yard. . . . Only five years after this photo was made, PE quit the business."

And even though the height of the traction era has long since passed, you can still enjoy the tight curves, overhead wire, and unique equipment associated with this style of railroading on a bookcase layout.

Modeling PE at LAUPT

Pacific Electric's prototype operations at the Los Angeles Union Passenger Terminal were compressed into a compact four-track yard. However, to minimize the HO scale traction layout's overall footprint, I used only three tracks branching from a three-way turnout.

I also focused on the layout's vertical scenery to save space. The red box motors are framed by a low-relief, bright white stucco express building with a terra-cotta tile roof. The prominent clock tower adds a nice signature element in the right-rear corner, as do the palm trees on the left. And the con-



Illustrations by Jay Smith

crete street overpass hides the left end of the layout, where a removable staging cassette is attached.

Another unique aspect of modeling the PE at LAUPT is that each piece of rolling stock is self-propelled and can operate as its own train. You could fit eight to ten trains on three sidings – that's a lot of trains in only three square feet! And with two platforms each more than 18" long, there's ample room for baggage carts, which – as the lead photo shows – were quite numerous at LAUPT.

Running the wire

The layout is based on the Pacific Electric prototype. Stringing the wire can be challenging, but the finished product looks great. The overhead wire could even be cosmetic to preclude the need for additional wire on the staging cassettes. A Digital Command Control system would help facilitate independent movement of so many tightly packed box motors.

As this bookcase layout plan shows, a traction railroad can provide a variety of action in a small amount of space. Since each box motor is its own train, you can easily fit a large number of trains into a few sidings.

There is a wealth of resource material available on the subject of traction railroads. Several books have been written on their prototype operations, and the Model Train Magazine Index located at *Model Railroader's* Web site (www.modelrailroader.com) is a valuable resource that will lead you to articles on Pacific Electric and traction modeling that have appeared in the model railroad press over the past several decades. With an abundance of reference material available, capturing the essence of a traction railroad in three square feet is certainly an achievable goal. MRP

Trevor Marshall lives in Toronto, Ontario, Canada, where he runs his own reporting and writing business. He models the Boston & Maine's Claremont, N. H., branch and has designed several prototype-based model railroads for other modelers.

Learning points

- Electric railways often crammed a lot of action and equipment into remarkably small areas – here, eight to ten trains in a compact downtown terminal.
- Stringing overhead wire looks challenging, but ample reference material is available. Harvey Simon's article on stringing overhead wire appeared in the February 2000 *Model Railroader*.
- Reaching under and through the overhead wire to uncouple cars isn't required in this terminal, as every car is self-propelled and hence a separate train.

Two plans for a dorm room

The Union Pacific in Salt Lake City inspired these HO plans

By Dave Husman
Photos by the author

Here we see the last run of the Sandy Local down 4th West St. in June 1993. An assortment of freight cars were needed on this train to serve the various industries.

When I started designing my two bookcase layouts, the Minimalist and the Hangover, I decided they would need to be built with simple hand tools. I've never seen a dorm room equipped a with radial-arm saw.

I also decided that the "benchwork" would be 2"-thick rigid insulating foam. The foam cuts easily with a box cutter or razor saw, and holes can be made with a bamboo skewer or a hand drill.

The foam also works well because it can be glued with common white glue or tubes of construction adhesive in a cheap caulking gun, and painted with interior latex or craft paints. Water-soluble glues work fine for bonding scenery and track.

The track plans were inspired by an area on the Union Pacific in Salt Lake City, Utah, where the former Provo Subdivision left the UP passenger depot and headed south. At this location, the Provo Sub began running down the middle of 4th West St. There was a runaround track with equilateral (wye) turnouts in the street.

The Minimalist

The challenge of this plan is to achieve some level of operation on an 11" x 36" bookcase layout in HO scale. To overcome this challenge, some compromises will be necessary. Auto racks and SD70MACs will have to take a back seat to four-axle diesel switchers or tank engines and 40-foot or shorter cars. This is ironic because the UP prototype the layout's based on ran freights powered by EMD DD35s!

To squeeze a layout into three square feet, I had to use some uncommon track arrangements, such as wyes. A wye, or equilateral, turnout is where both routes diverge from the track's center line, achieving maximum track separation in minimum distance.

The location and orientation of track, especially the turnouts, is critical. Large layouts can have the track alignment vary by several inches and not seriously affect operation. But on a shelf layout, inches are everything.

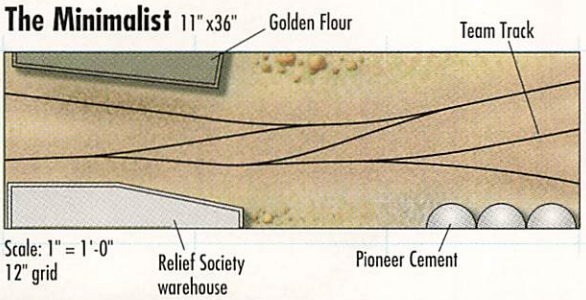
I arranged Atlas code 83 no. 4 left-hand, right-hand, and wye turnouts so they all fit on one sheet of legal-size paper and made a dozen photocopies. On a large sheet of wrapping paper, I drew the outline of the shelf layout. I then cut out the paper turnouts and arranged them on the full-size layout template until I had a plan that worked.

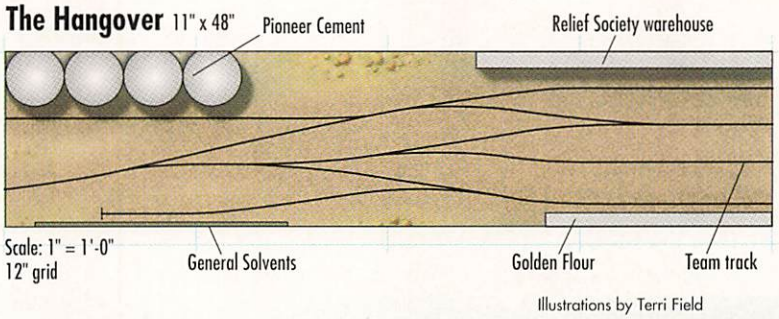
I put HO equipment on the plan to check for clearance and track capacity. Full-scale planning is critical when space is so tight, and it's also useful as a tool to check elements that project below the roadbed, such as switch motors, to make sure they don't interfere with the benchwork.

This mix of turnouts in close quarters may require the track to be assembled so the joints are not entirely square or odd-length pieces of track fit between sections. Some slight rail bends and a little work with flush-cutting pliers and a file should minimize misalignments.

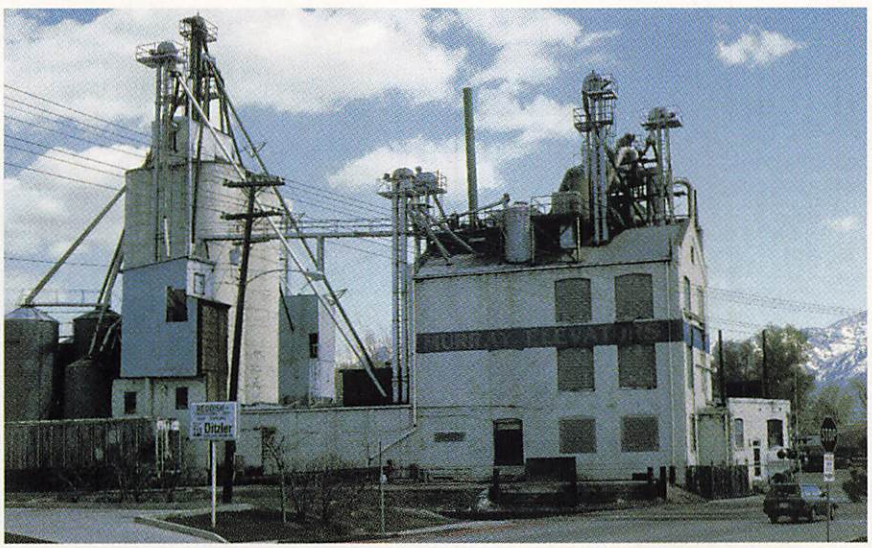
The industries I chose for the Minimalist are typical of those found along 4th West St. I selected industries that used the shortest cars possible in post-1940s standard gauge operations.

The Relief Society warehouse received food and emergency supplies, then repackaged them for shipment overseas; Golden Flour Mill received grain in 40-foot boxcars and shipped





Illustrations by Terri Field



This mill in Sandy, Utah, ten miles south of the area depicted on the plan, could serve as a prototype for Golden Flour mill.

bagged flour in boxcars, Airslides, or regular covered hoppers; and Pioneer Concrete received cement and gravel in two-bay covered hoppers.

The structures will have to be shallow flats. If you buy regular building kits, at most only the rear half will be used. An alternative would be to use cardstock or foam scraps left over from the "benchwork" to create silhouette buildings. They'd mimic the shape of a structure and would be painted the base color with few details.

The operating scheme for the Minimalist will be more of a switching puzzle than a prototypical operation. I would start with a couple cars on-spot (at the industries) and a train with a couple of cars on the main. The cars in the train would be switched one for one with the cars on-spot.

The runaround, although small, allows for spurs in both directions to be worked. As you gain experience, you can increase the number of cars and the complexity of the moves.

The Hangover

The exciting part of this plan is the realization that you don't have to limit it to the size of the shelf. Rigid foam can withstand unsupported overhangs of 6" to 8", especially for the three- to five-year life-span of this layout.

I stretched the Hangover to 48", which requires a 6" to 9" overhang on each end of the bookcase. The width was maintained at 11", although increasing it by a few inches would add space for buildings and scenery.

This plan has one additional track that can serve as a spur to set cars on during switching, an engine tie-up track, or the end of a branch line.

I used the same industries as on the Minimalist but added the General Solvents Co. General Solvents receives chemicals in tank cars and in 55-gallon drums shipped in boxcars and ships out cleaning agents in boxcars.

Ironically, the Hangover has shallower buildings than the Minimalist because it has more tracks in the same width. To reduce the footprints of buildings, eliminate a loading dock and just have doors. This increases the complexity of spotting cars since each car door must be opposite a loading door.

Track lists

The Minimalist
Atlas
500 code 83 36" flextrack (2) or
520 code 83 9" straight tracks (6)
523 code 83 1½" filler pieces (2)
542 code 83 left-hand turnouts (2)
560 code 83 wye turnouts (3)

The Hangover
Atlas
500 code 83 36" flextrack (3) or
520 code 83 9" straight track (12)
523 code 83 1½" filler pieces (1)
542 code 83 left-hand turnout (1)
543 code 83 right-hand turnouts (2)
560 code 83 wye turnout (1)

Learning points

- Even the smallest track plan requires a runaround for facing-point moves.
- Choose industries that reflect a specific region and era.
- Adding a slight overhang on either end opens up switching options.
- Track planning for switching areas is aided by using full-size track templates.

The Hangover is large enough to use a more formal operating system such as switch lists. A spreadsheet or database application could determine which industries to switch.

While these plans are not intended to be the basis for permanent layouts, they could become a switching area off the main track of a larger layout. MRP

Dave Husman models the Wilmington & Northern branch of the Reading in HO. He and his family live in Omaha, Neb., where for the past 23 years he has worked as an operating officer for the Union Pacific.

Industrial sprawl

Ideas for modeling industries where space is tight

By Paul Dolkos
Photos by the author

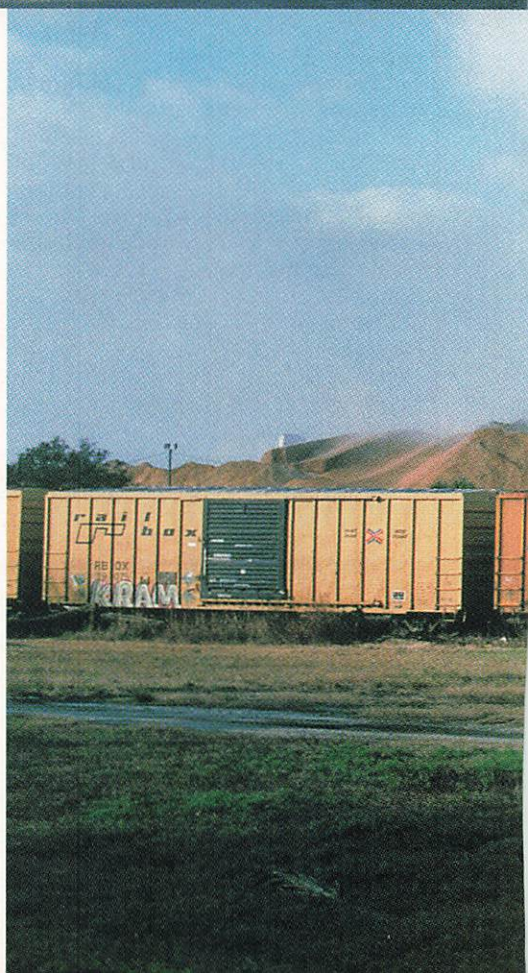
Most full-size railroads earn their keep by serving industries, so factories, mills, and warehouses are important scenic and operational components of model railroads. Some prototype industries are compact, but many are huge, stretching for a mile or more along the right-of-way.

So how do we depict the railroads' links to such industries, especially on a linear, narrow shelf layout? What follows is a catalog of ideas for modeling industries, large and small, where space is at a premium.

Limited space

First let's consider the limited space situations that we typically encounter. Perhaps there are only a few inches between the main line and the aisle. There's room for a siding but not the associated structures. A problem also arises when we're trying to fit a huge industry such as a steel or paper mill into an odd corner. You may even have a relatively large area into which to drop an industry, but how do you make the most of it?

The usual approach, one that's easy to understand, is to model small industries. These include feed mills, fuel dealers, distributor warehouses, and small manufacturing plants. Many are



Above: Today's equivalent to a team track is a bulk-materials handling terminal. This CSX operation in Spartanburg, S. C., has stub sidings for at least 20 cars.
Right: A small yard bordering a wood-chip pile outside a paper mill at Fernandina Beach, Fla., allows CSX crews to sort cars before they venture into the mill complex. We can model the yard for its operation, but put the mill on the backdrop to save space.

in limited spaces

A single siding serves this St. Mary's Timber Co. pulpwood loading yard in Yemassee, S. C. The small office and loader complete the scene.

A bulk loader for grain transfer on the Union Pacific (formerly Southern Pacific) at Beaumont, Calif., requires little space.

quaint and modelgenic, and they can be scaled to fit modest spaces and still look convincing. Clustered in a town setting, they provide interesting switching opportunities for a local freight's crew. And, with an appropriate selection of industries, a regional theme for your model railroad – such as agriculture, lumbering, or light manufacturing – can be established.

Smaller industries

Small industries can often be modeled even if there is just enough room for a siding along the layout edge. A coal dealer, for example, can be represented with a trestle under the track, even if there isn't space for the office and truck scale. A bulk oil dealer's presence at trackside can comprise nothing more than a hose connection. Prototype storage tanks were often located quite some distance from the right-of-way and therefore don't necessarily have to be modeled.

Bulk material unloading points may consist of little more than a drop pit between the rails or a light-duty conveyor. An unloading platform can be installed along a siding with the assumption that the industrial structure it serves is just beyond the benchwork – an "aisle-side" industry. Or there can be just the siding itself with a suggestion of a driveway alongside for truck access.

The point is that structures don't have to occupy every square inch of layout real estate to convey the notion of a rail-served industry. Many industrial areas are relatively open, and some tracks may be used only for car storage. The remaining open spaces give your scene some breathing room and help to increase the apparent size of your model railroad.

Team tracks

The downside to small industries is that on the prototype traffic was usually limited. Some received only a couple of cars a year, or the flow was very seasonal. Today, many such sidings, if they still exist, are weed-grown and even disconnected from the railroad.

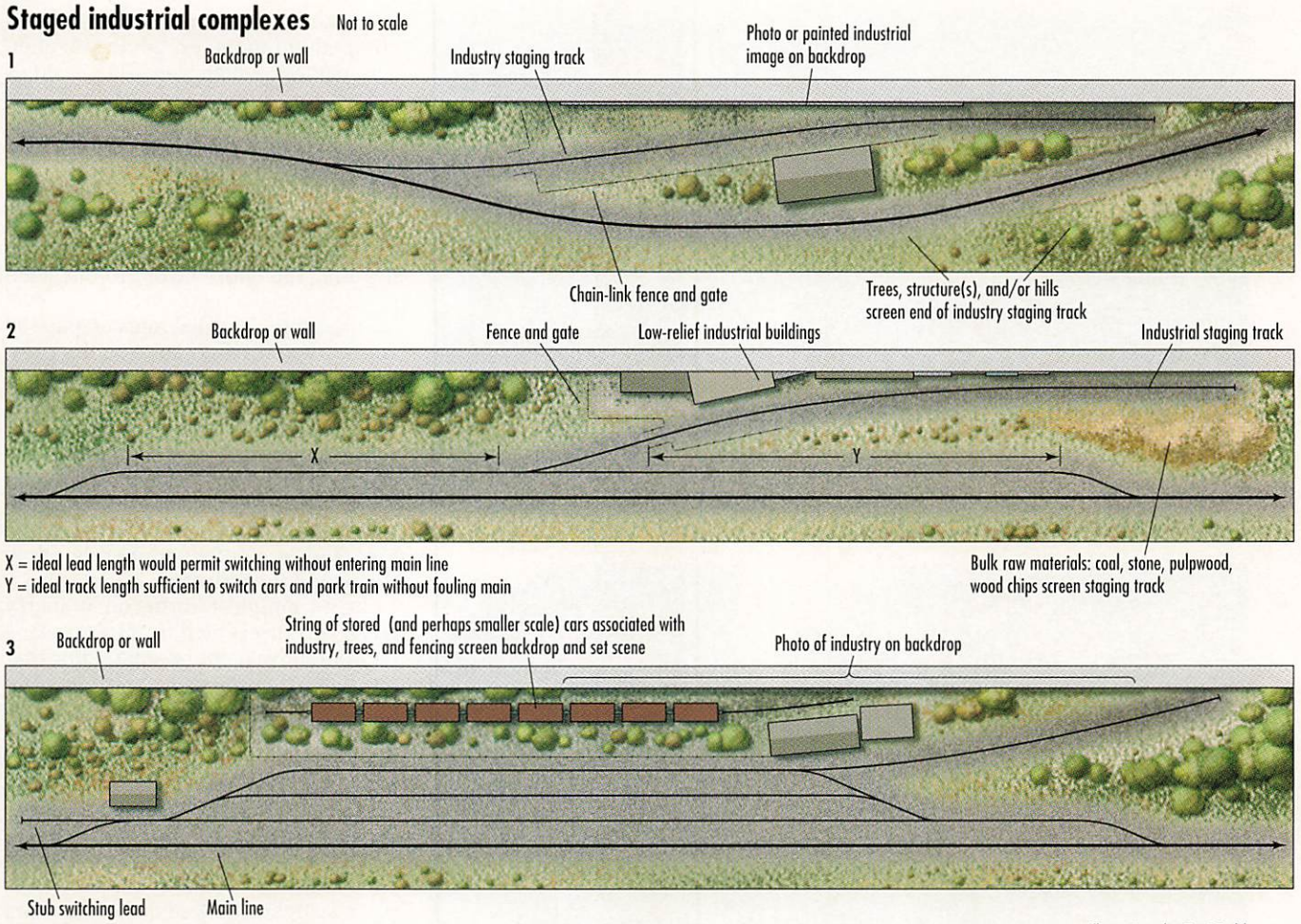
For more-appropriate traffic levels, consider railroad-owned car destinations. These may include team tracks, freight houses, interchanges with connecting railroads, and an increasingly common entity, the regional distribution terminal. They may not be "industries" per se, but they are a good source of heavy and varied traffic.

A team track, often located near or beside a town's freight house, may be nothing more than a single stub track alongside a roadway where trucks (originally wagons drawn by teams of horses, thus the name) can back up to cars to load or unload. The railroad may provide a gantry or other type of crane, or there may be a wood or concrete platform with a ramp, sometimes with a provision for unloading end-door cars. Multiple team tracks in larger towns and cities were often arranged in pairs.

Team tracks are used by customers that don't have private sidings but require carload service. Any type of car may, therefore, be spotted on a team track. Even a coal hopper or tank car is appropriate. A siding or team-track-style yard may be designated as a produce terminal where trucks come to pick up loads of perishables from blocks of refrigerator cars ("reefers").

Less-than-carload lots

The freight house itself wasn't intended to receive full carloads of freight consigned to a single customer but rather was a less-than-carload lot (LCL) terminal, like a United Parcel Service terminal today. The local freight or town yard engine would spot a boxcar at the platform, sometimes waiting while shipments to and from that point were unloaded and loaded before taking the car on to the next town. (In small towns, this might be done right on the main line in front of the depot.) If the town received or generated a carload or more of shipments each day, then a boxcar would be left at the platform for later pickup.



Illustrations by Terri Field

In some cases, portions of freight houses were leased to customers of the railroad, such as a grocery distributor or a freight forwarder. Such arrangements increased the car flow.

Big-city freight stations handled lots of LCL traffic, and the number of boxcars moving in and out each day might be in the hundreds. For most of us, however, an outlying station serving as an LCL transfer point would be more manageable. These were generally near junctions from which several routes radiated. Here shipments were removed from cars, sorted, and transferred to other cars headed for the desired destinations, not unlike what FedEx does at its Memphis air hub.

An LCL transfer station could be as simple as a single track flanked by a 20-foot-wide platform covered with an umbrella shed. There could be two tracks with a platform between them, or even several parallel tracks where cars were spotted with their doors aligned so ramps could be placed between the cars to serve as bridges for loading and unloading.

The LCL boxcars delivered by local and some through freights were spotted at the transfer platform. Packages and general merchandise were transferred from car to car based on destination. While there could be many schedule variations, there was often a frantic period during the day when all cars had been spotted, allowing the transfer process to get into high gear. The cars were reloaded, doors were sealed, and a switcher pulled the outbound loads for addition to the appropriate trains.

This activity alone justifies a high turnover of cars with the limited facilities typical of our model railroads. The activity is era-sensitive, since the cost of handling LCL freight was high, and the railroads largely exited the LCL business by 1960.

Interchanges

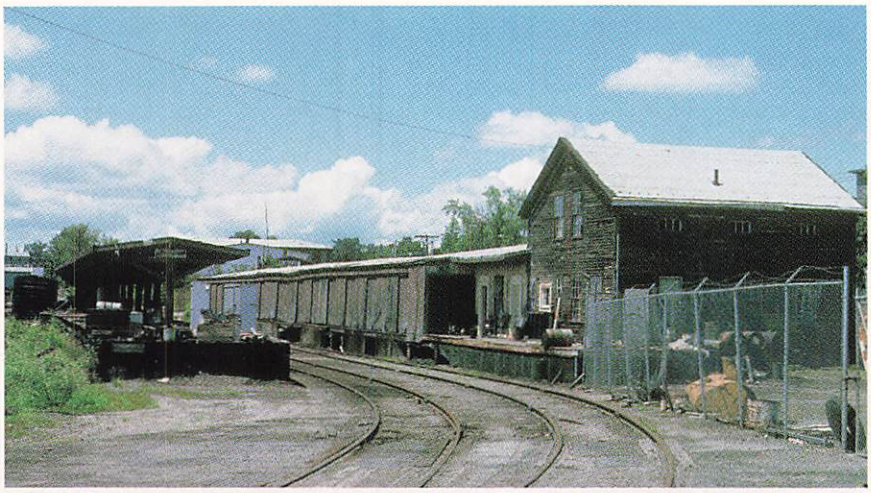
An interchange between two connecting or crossing railroads creates a lot of variety in a minimum space. A single track connecting the two lines allows almost any type and quantity of freight car to be set out or picked up – sort of a universal industry. By extending the interchange track into a hidden staging area, the foreign road's (any not your own) locomotives can switch the interchange too, adding both visual and operational interest to your railroad.

Transfer centers

As private sidings have disappeared, bulk-transfer or regional distribution centers have replaced them. These modern team tracks handle commodities such as cement, plastic pellets, grain, lumber, or even autos and small trucks. They may include only a track or two, flanked by concrete aprons so trucks can load and unload. Many such centers are dedicated to a specific commodity. There may or may not be specific structures, such as for grain or cement, on the premises. Auto ramps often have a secured area for vehicle storage.

Engine terminals and shops

Fuel, sand, and supplies such as lubricating oil are shipped into engine terminals. Shops may be collocated with the servicing tracks, thus increasing the rail traffic to include rebuilt diesel engines, generators and alternators, and other heavy items.



This freight house in Gardner, Mass., served as an LCL (less-than-carload lot) transfer point between various Boston & Maine branches.

No extra area is required to model a coal trestle such as this one in Richmond, Va.

Minimalist industry: a fuel dealer's hose connection for tank cars in Brattleboro, Vt. Truck standpipes are on the spur's embankment; storage tanks are 100 feet away.

In the steam era, coal-burning roads shipped hoppers or gondolas filled with cinders, which were often used as ballast for sidings and in yards. The point is to think of engine terminals as sources of "freight" traffic as well as a place to service locomotives.

Modeling heavy industries

Depicting heavy industries without devoting the entire layout to one such industry usually requires a higher level of subterfuge. The diagrams on page 39 show a few ways to suggest the presence of a large industrial plant rather than trying to actually model its many buildings and complex trackwork.

Although such large industries typically occupied many acres, the portion served by a railroad was often quite small. We can focus on modeling this area and be content to merely imply the rest of the industry.

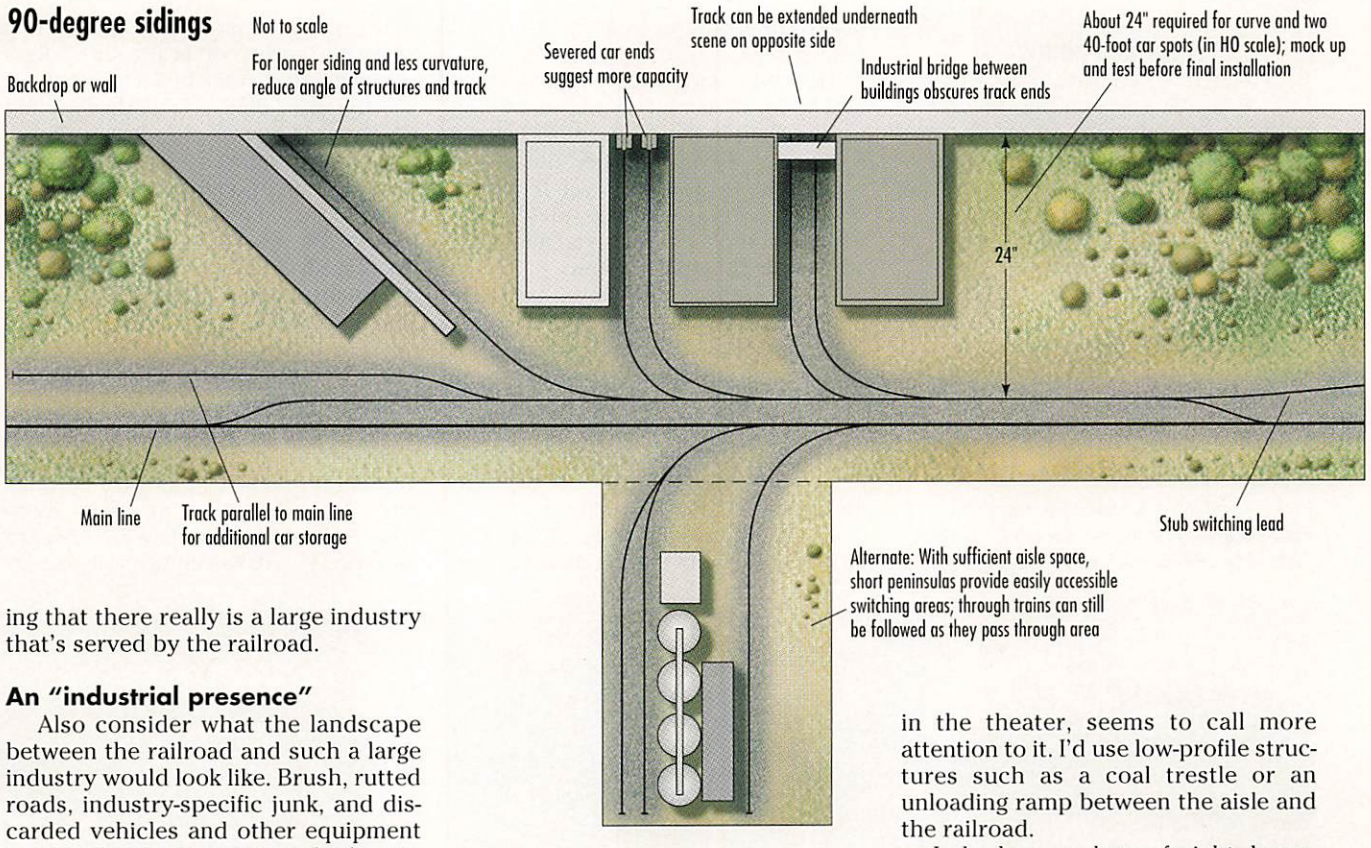
In its simplest form, an industry could be represented by a track taking off from the main or passing siding that stubs at the aisle edge, or perhaps at a gate or behind a hill, trees, or a structure on the backdrop side of the benchwork. Signs, building flats, or images on the backdrop can serve to establish the identity and scope of the suggested industry.

Trains serving the industry would pick up cars presumably set out by the plant switcher as well as set out cars for that switcher to pick up. This may be less satisfying than actually having a switcher that works within the confines of a large industry, but it's better than no industry at all.

Tony Koester modeled only a few structures of a paper mill at North Durbin, W. Va., next to the aisle on his HO scale Allegheny Midland. The rest of the mill was "virtual," supposedly lying beyond the front edge of the layout, served by a long lead track. A diagram of the plant posted on the fascia showed the Mill Job crew how to block cars for efficient and safe switching within the plant. It wasn't as much fun as switching an actual mill, but it added action and realism.

Moreover, the Mill Job was a Western Maryland train, not AM, because the mill was located on a portion of the WM main line where the Midland had trackage rights. That added another job to Tony's operating sessions.

Having a small yard near such a complex is a good idea. Cars can be sorted for in-plant delivery or held for later spotting. These "off-spot" cars might include raw materials, chemicals, and fuel not immediately needed in the plant. This would add to the feel-



ing that there really is a large industry that's served by the railroad.

An "industrial presence"

Also consider what the landscape between the railroad and such a large industry would look like. Brush, rutted roads, industry-specific junk, and discarded vehicles and other equipment would all help to suggest what's supposed to exist nearby.

If more of an industrial presence is desired and the space is available, focus on the trademark or "signature" structures. Think in terms of how an industry is identified by its unique skyline elements. For a steel mill, that's probably the furnaces. A paper mill could feature piles of pulpwood or wood chips and conveyors. Look for buildings with interesting roof lines instead of the all-too-common low, big-box structures.

Don't devote too much space to actual car-spotting locations. Instead, allocate most of the area to yard or storage tracks with the key structures on the perimeter. This will provide enough car capacity to create a major traffic source on your railroad.

It's been my experience that you don't need a maze of sidings to provide satisfying operations within industrial areas. In fact, it's easy to make the switching too complex, even though there are some ludicrous prototype examples. Switchback sidings, for instance, often create more frustration than interest unless the leads are long. Having too many inbound cars is also frustrating unless there is a place to store off-spot cars. A switching lead or passing track at the industry site lets crews work without "fouling" (occupying and obstructing) the main.

Representing big structures

When there are tracks close to the wall or backdrop, we often resort to flats, using only the front or rear walls of large structures. I'm not overly fond these unless they will be viewed from a low angle or you can use trees or other devices to screen their ends from direct view. (See "Making an inch a mile" in MODEL RAILROAD PLANNING 2002.) But if you build in a little depth, even two or three inches, the resulting thin buildings are much more acceptable. I'd be willing to sacrifice a track to gain space to add some depth to a structure. If I couldn't, I'd rethink what I was trying to accomplish.

The opposite problem is fitting large structures between the railroad and the aisle. If the space is tight, you might want to leave the area open. If a lot of switching is done there, you really don't want to be reaching over tall buildings or struggling to see car types, road names, and numbers anyway. And I don't think thin building walls jutting up from the fascia look any better than the background flats I strive to avoid.

If a very thin building at the edge of the fascia can't be avoided, I'd finish its aisle side to match the exterior of the front of the structure, or perhaps paint the back side the color of the fascia. Painting it black, as might be done in the theater, seems to call more attention to it. I'd use low-profile structures such as a coal trestle or an unloading ramp between the aisle and the railroad.

I do have a large freight house between the aisle and the railroad on my HO scale Boston & Maine layout. To save space, I copied a prototype design that had a track running into the building. It doesn't interfere with running the railroad, as no uncoupling operations take place behind it. This was a late addition to the railroad; if it had been planned from the outset, I would have liked to allow more width at this point.

But be warned: If operators can't see cars spotted on sidings inside buildings, they'll be unsure of their switching moves. Is a removable roof the answer? How many of your operators are going to feel comfortable picking up a detailed roof? Instead, you might model a different structure or scene, or simply install the track but not the building.

Mini-peninsulas

Many prototype sidings don't run parallel to the main but curve off at angles up to 90 degrees. In HO, you'll need at least a 24" mini-peninsula for a track that turns 90 degrees and allows for two cars to be spotted (see the diagram above). Add 6" for each extra HO car. A number of such sidings would create a busy switching spot with a minimum of added aisle congestion, but I'd build a working mock-up before deciding whether the gains offset the

Learning points

- Look to the prototype – it has space problems too!
- You can simulate nearby large industries with tracks that stub off the layout edge or butt into the backdrop, plus a few key (signature) structures modeled or depicted on the backdrop.
- Tracks that disappear into buildings mean that cars on them disappear as well, so provide easy viewing or access.

A freight house based on one in Milford, N. H., straddles a layout-edge siding on Paul's B&M layout to save space. Crews can look in the end to see if any cars are inside.

disadvantages of aisle congestion and tight curves.

Henry Freeman described a 4 x 8-foot "plug-in" layout section depicting a glass plant in the January 2003 *Model Railroader*. It can be rolled out of the way between sessions, yet it allows operators access on three sides, a plus when a complex track arrangement is surrounded by tall buildings.

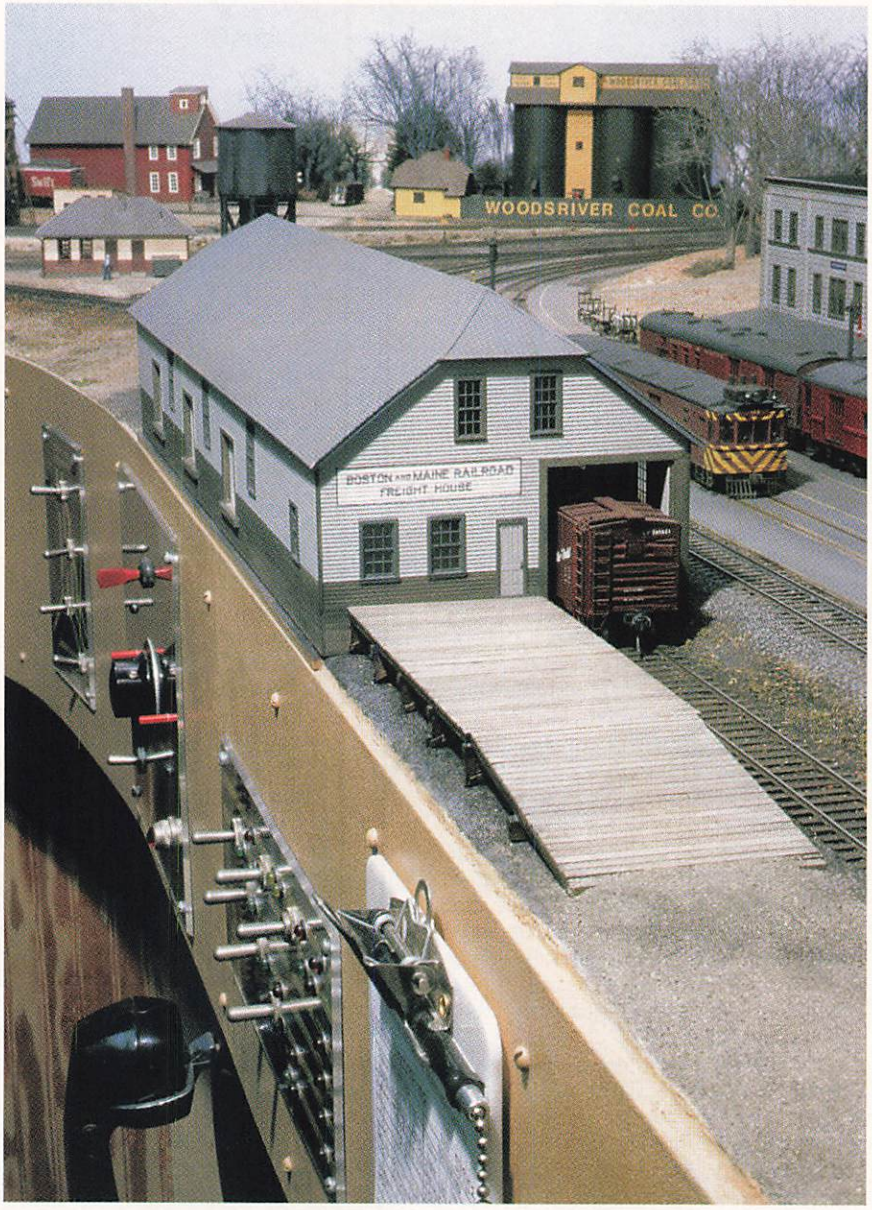
What Henry built is a portable peninsula. Even permanent peninsulas offer the opportunity to develop an extensive industrial area in a relatively small space. Where there's some extra floor space but not enough for a peninsula with a turnback loop for the main line, there will still be plenty of room for stubbed industrial sidings.

David Barrow did this on his Cat Mountain & Santa Fe. At Cat Mountain, there were two stub sidings running among a series of grain silos on a peninsula that stuck just a few feet out into the main aisle. You worked around all three sidings when switching it.

Mike Ritschdorf used a similar mini-peninsula to model a large brewery complex including a grain elevator. The benchwork was some 60" off the floor, with the structures extending up to the basement ceiling. Amidst those massive buildings you really felt you were on the ground working the sidings.

When in Rome . . .

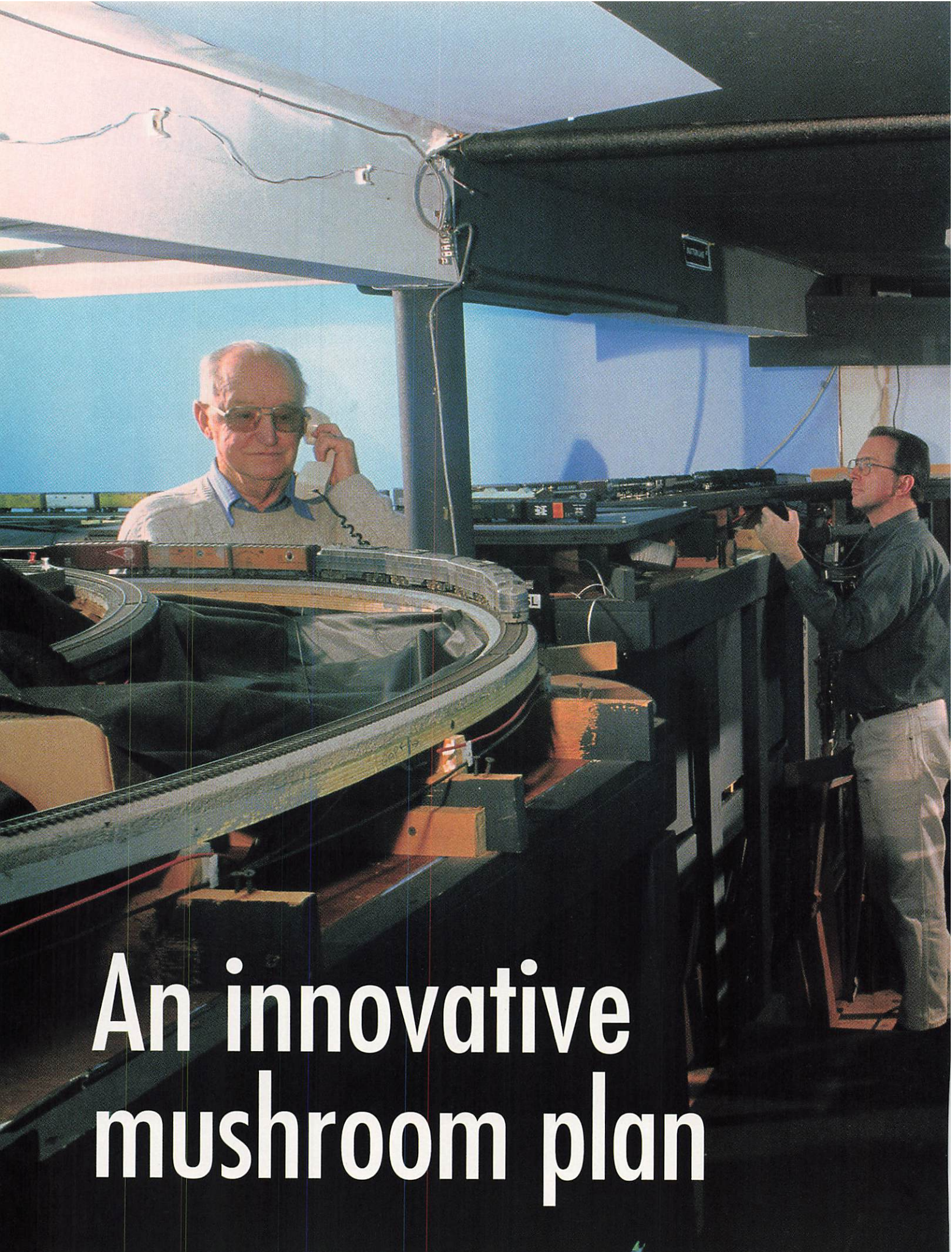
Squeezing industries into limited spaces is a concern not limited to our model railroads. The full-size editions often face the same problem. Keep your eyes open and your camera handy as you drive along a railroad for



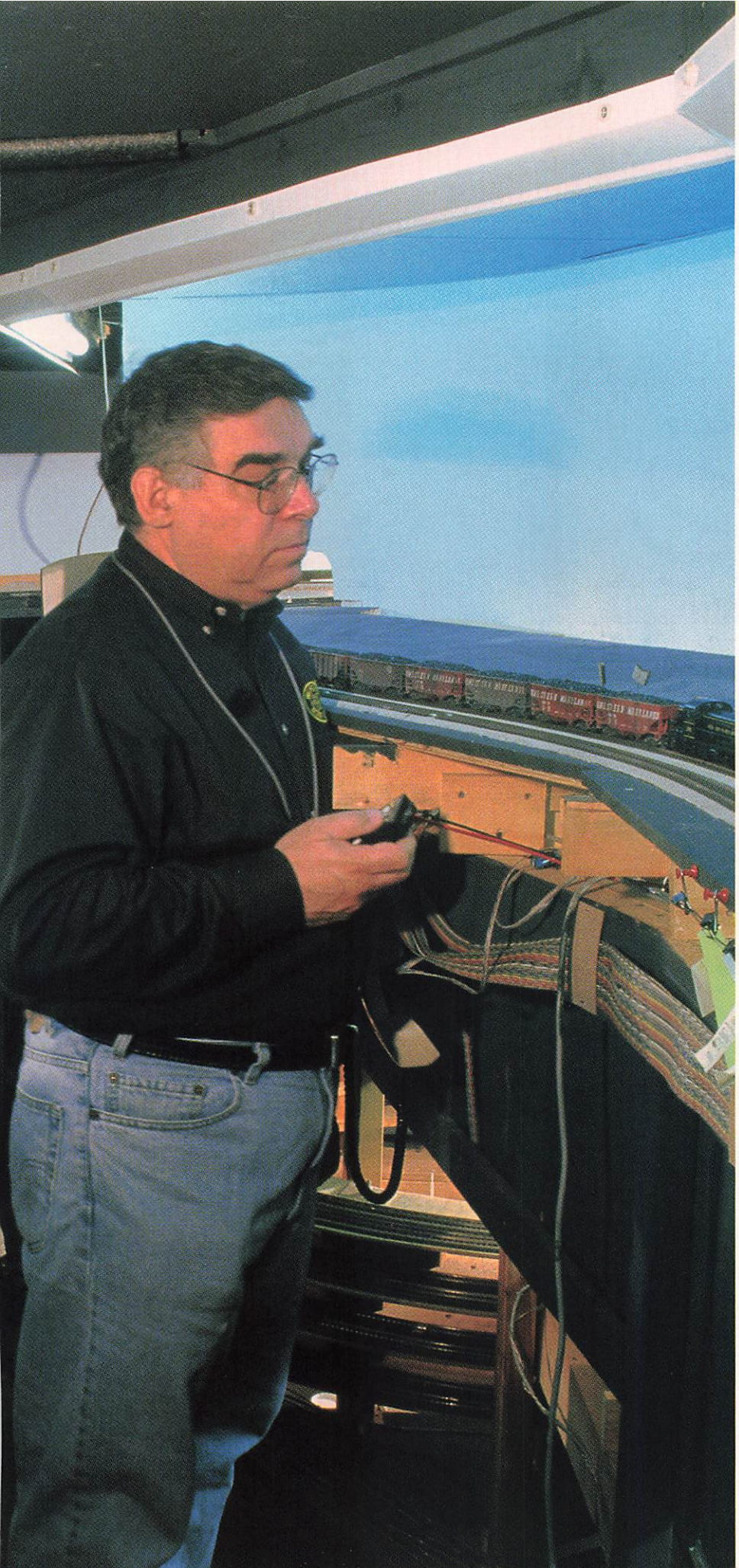
more ideas about squeezing sizable industries into tight places. MRP

Paul Dolkos, a consultant who lives near Washington, D. C., has been a regular contributor to MODEL RAILROAD PLANNING *since the inaugural issue in 1995. His impressive but compact HO scale paper mill complex was featured in the April 2000* Model Railroader.

Right: Many activities of a large industry can be suggested rather than modeled. The pulpwood pile serving author Paul Dolkos' paper mill is truncated by the layout edge, as is the conveyor serving it.
Below: Lance Mindheim's N scale Monon RR (featured in the July 2001 issue of *Model Railroader*) has a spur near the backdrop serving several limestone quarries represented by derricks on the horizon.



An innovative mushroom plan



A multilevel HO layout with a raised floor for optimal viewing heights

By Henry Freeman

Photos by Paul Dolkos

The West Virginia Western is gone, its life, like that of its owner, all too short. As an operating railroad, the HO scale line survived only four years and hosted fewer than 20 operating sessions. But that was plenty of time for Jerry Bellina to prove the worth of his innovative design. He carried the concept of a "mushroom" design to a new level, fitting an amazing amount of railroad into a 25 x 25-foot garage.

Within that space was a single-track, linear railroad with a 240-foot main line that could handle six operating crews isolated from one another. Included were a 100-foot-long helper grade, two yards, ten towns, a 150-foot-long branch line, three 25-car passing sidings, and enough operating challenges to keep the dispatcher and crews happy for hours.

Jerry died before he could publish an article about his design concepts. He was anxious to finish some scenery before showing it off, but he was always too busy working on other parts of the layout, helping on a friend's layout, or tinkering with some new electronic gadget. His interest in electronics led to his invention and manufacture of the Rail-Lynx wireless infrared command control system. And there was the inconvenience of his eight-year battle with cancer.

Fortunately, much of Jerry's thinking about his mushroom railroad survives through e-mails to friends and in the on-line archives of the National Model Railroad Association's Layout Design Special Interest Group. Also surviving are a video that friends helped him shoot and handouts he gave to visitors.

What you can read on the following pages is a "conversation" with Jerry re-created from this record.

Harold Werthwein (left) talks to the dispatcher while author Henry Freeman (foreground) and Scott Dunlap enjoy Jerry Bellina's West Virginia Western for the last time.

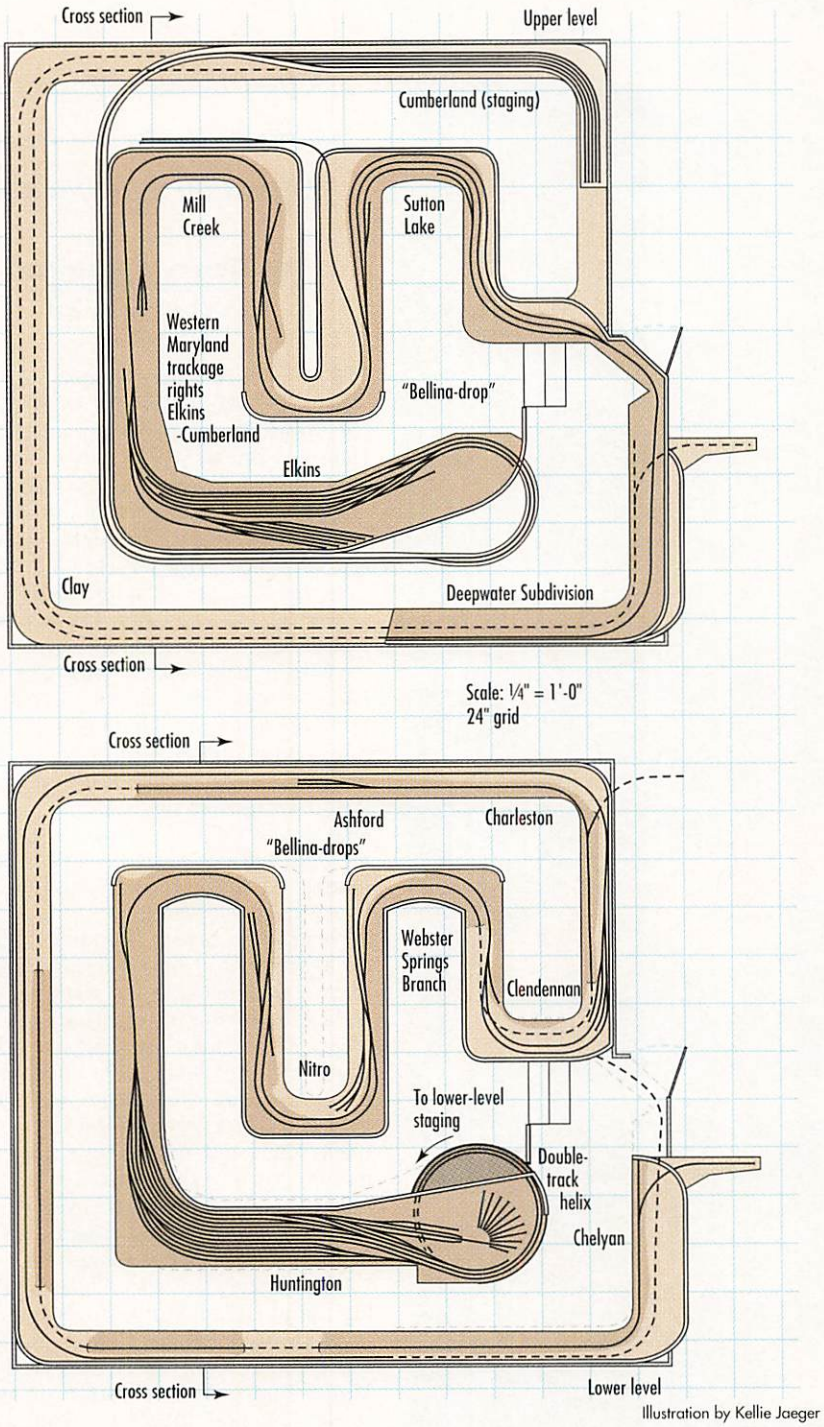


Illustration by Kellie Jaeger

The layout at a glance

Name: West Virginia Western
Scale: HO (1:87.1)
Size: 25 x 25 feet
Theme: inspired by Western Maryland
Locale: West Virginia between Elkins and Huntington
Period: mid 1950s
Layout style: mushroom multilevel linear walkaround
Layout height: 46" to 54" (from floor, floor height varies – see trackplan)
Benchwork: 2 x 4 subassemblies and L girder; upper level hung off ceiling beams with lag bolts into 2 x 4s and 1 x 4 extending downward to support L girders
Roadbed: cork on pine spline
Track: Atlas code 83 and Micro Engineering code 70 flextrack
Length of mainline run: 240 feet
Turnout minimum: no. 5
Minimum curve radius: 30"
Maximum grade: 2.3 percent
Scenery construction: none
Backdrop construction: hardboard
Control: Rail-Lynx infrared command control

An interview with Jerry

Henry: *Tell us about the concept behind the West Virginia Western.*

Jerry: The WVW is a bridge railroad providing through service for freight, produce, and passengers. It's also a coal hauler, serving many mines and shipping coal both north and east. It also serves a large paper mill on a branch. The railroad interchanges with the Western Maryland, Chesapeake & Ohio, Baltimore & Ohio, and Virginian. The era is the mid-1950s during the transition from steam to diesel.

Henry: *What was your main design consideration?*

Jerry: My primary goal was operation, so mainine length was a higher priority than scenic vistas. I also wanted a linear design where trains run through the scene just once – what John Armstrong dubbed "sincere."

I designed the benchwork first, keeping one aim in mind: Maximize the mainline run so we could run long trains. The basic track plan is pretty simple: The track just follows the benchwork! Obviously, I had to consider where I wanted the yards and staging, but that was about it.

I began by exploring standard single-deck, walkaround design. After many, many benchwork sketches, I realized that I always came out with about the same mainline length – around 180 feet. That was too short to permit the type of operations I was envisioning, so I began investigating multilevel designs.

When I tried the mushroom concept I found I could get 240 feet of main line, about a third more than on a single level. The garage has a nine-foot ceiling, so I took advantage of that.

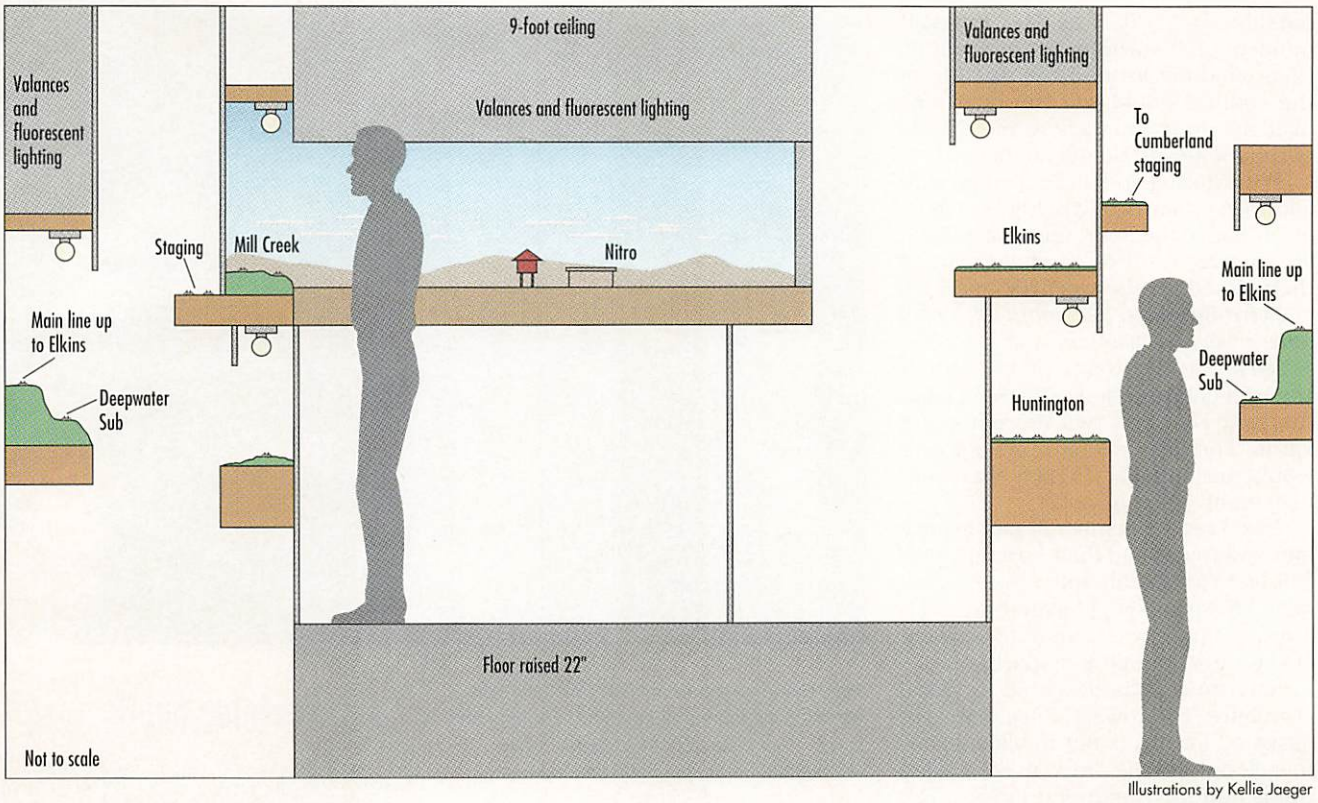
The towns were located mainly to ensure more than a train length between them and to provide enough passing tracks to allow a lot of trains to get through. We normally operate about 25 trains in a session.

Developing the mushroom

Henry: *Where did the mushroom idea come from?*

Jerry: Richard Benjamin originated the idea and John Armstrong described it "Meet the mushroom" in the October 1987 *Model Railroader*. Reading that article really sold me. Here was the solution I was looking for, except the designs had duckunders to get to the upper level. That didn't

Mushroom cross-section



Illustrations by Kellie Jaeger

appeal to my creaking back, so I came up with a walk-in design.

Henry: *How is a mushroom different from a regular double-deck layout?*

Jerry: The mushroom is a double-deck layout too, but instead of seeing both levels one above the other, you see only one; the other is viewed from the opposite side. As you follow your train, you don't see another scene above or below.

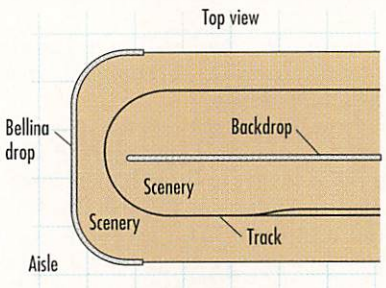
By changing the floor elevation, the railroad is always near the optimum viewing and operating height. You don't have to compromise with a level that's too low or too high.

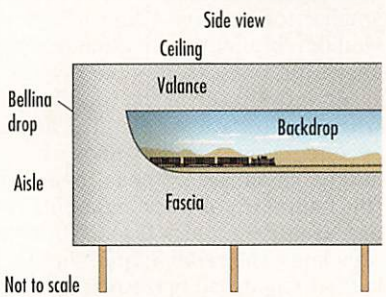
To be honest, a double-deck design might have given me a longer run, since my plan doesn't double up on the outer walls. But the mushroom design allows both yards to be a nearly ideal 48" to 53" above the floor.

Henry: *What other concerns turned you away from adopting a more traditional multi-deck design?*

Jerry: I investigated shelf-over-shelf designs, but after many attempts using mock-ups, I concluded that the shelf heights came out either too high or too low. And if an upper shelf was deeper than 12" to 18", it partially blocked the view of the lower shelf. I tried using stacked shelves of different depths, but the isolation between shelves suffered.

Another drawback was the problem of two or three crews operating at different points on the railroad, yet actually being at the same place in the aisle, especially if one town is above another. That's likely in a multilevel design if you make the towns level because you tend to place level parts of the railroad above each other.





The eureka moment

Henry: *Was it difficult designing a layout in three dimensions?*

Jerry: Thinking in 3-D can be challenging. I started playing with a piece of string, because that was the easiest way for me to see how one level would stack above another.

I tried every combination I could imagine. Then one night I played with a design that started and ended in the middle of the room instead of on an

Building a raised floor

The mushroom design of the West Virginia Western required building a raised floor 22" high. Jerry used concrete blocks standing on end, spaced about four to six feet apart. He then put 2 x 6s on edge on top of the blocks, spaced them every 16", and used ¾" plywood as the surface – just about what a standard house has. He anchored the 2 x 6s to the benchwork with lag bolts and to each other with big nails. This resulted in extremely sturdy support, with no sag or bounce. The material cost was about $80, but the mushroom bought an increase in mainline run of 33 percent. – *Henry Freeman*

outside wall. It was a "Eureka!" moment. By starting in the middle, then climbing around the outside of the room, I could run the main line over the door and back to the middle of the room with no duckunders!

With staging added, I ended up with a four-level railroad with lower staging at 24" above the floor, upper staging at 96", but most of the modeled part of the railroad was between 48" and 54".

Henry: *Besides a long main line, what other objectives were on your list?*

Jerry: Having crews pick up their trains in one yard and drop them off at the next required two division-point yards. That also meant motive power would be changed, which was very high on my must-have list.

Next I set the number of passing sidings and towns and their spacing. With 240 feet (four scale miles) of sincere main line available, I located three 17-foot passing tracks (equal to a 30-car coal drag) about 60 feet apart.

Each town was designed for local switching. The town sidings were not designed for meets but to allow locals to get out of the way of scheduled trains and for runaround moves. The smaller towns have either a switching lead or a branchline junction to make it easier for locals to stay out of the way.

At Sutton Lake at the top of the hill, where helpers are cut off, I added a second passing track to allow the local and two mainline trains to meet. When this happens, for a few moments there are trains on every track. Then, minutes later, the relative quiet of just the local doing its thing returns. Neat!

Room for a mushroom?

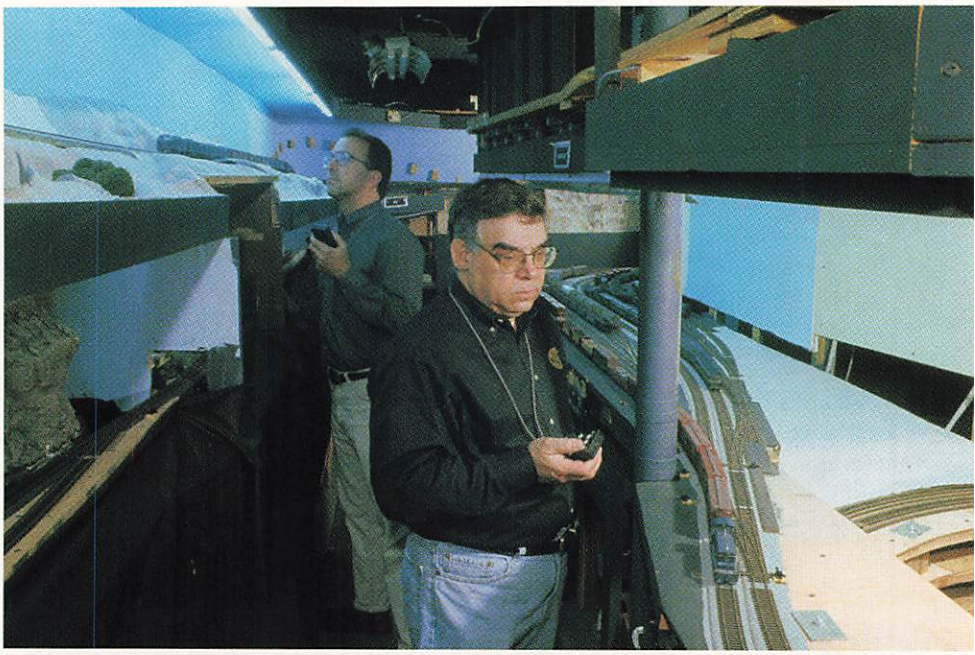
Henry: *What are your mushroom's basic dimensions?*

Jerry: The room is 25 x 25 feet after I "enhanced" our laundry room by moving the wall 22". That allowed a better swing for the upper main line and let me use 30"-minimum-radius curves. I used a minimum aisle width of 30"; a couple of places around the yards have 36" aisles.

Henry: *Did the headroom get a little tight on the upper level?*

Jerry: Fortunately, I had a nine-foot ceiling to work with. A 22" raised floor leaves 6'-7" of headroom on the upper level, which is okay.

With a slightly higher ceiling I could have avoided having nod-unders – where taller people duck just their heads to walk through – at the two places where the main ceiling beam crosses an aisle. These have six feet of clearance underneath and I'm 5'-9", so I can walk right under them.



Here Henry runs a train through Huntington, while Scott's train is climbing the grade to the upper level. Elkins Yard is directly above Huntington, but in the mushroom design it isn't visible from this lower level aisle.

Henry: *Were there special construction considerations to accommodate the mushroom design?*

Jerry: Building the mushroom has been a carpenter's nightmare. It's hard to think clearly in three dimensions, so I had to figure out the benchwork by trial and error. The layout was in a loose-benchwork stage for a long time – "loose" because if you touched anything, it usually fell or moved. Stan White really helped me get beyond that stage.

I built subassemblies that support L-girders. The upper level is hung from ceiling beams with lag bolts into 2 x 4s, with 1 x 4s hanging down from that. L-girders are attached to the 1 x 4s. The construction is really just typical L-girder with innovative supports. The down side is that at some places on the lower level your view is blocked by a support, but not where you really notice it much.

Exploding the helix

Henry: *Multi-deck layouts often use a hidden helix to get from one level to the next. How did you avoid that?*

Jerry: I didn't want to use a helix as part of my mainline run because it hides trains for a long time and typically ends up being a major portion of the main line.

My solution was to uncoil the helix and wrap it around the walls of the room as a long, exposed grade climbing from 48" to 74". This gives us a 100-foot-long, 2.3 percent grade – great for helper operations.

I'm a fan of Western Maryland coal-country railroading, so the WVW has mid-train helpers as well as pushers on the back of the train.

Henry: *Are problems caused by the helper grade being above your head?*

Jerry: Actually, the height allows some interesting views of the railroad. As long as the scenery slopes down from the track toward the aisle, vertically challenged people can still see the trains.

The track on one section is 73" high, but a five-footer can see it clearly. It's one of the more popular places to rail-fan on the railroad – looking up at trains is rare on a model railroad but common when you visit the prototype.

A crew member will have walked up the two steps to the upper level before reaching the top of the grade, making

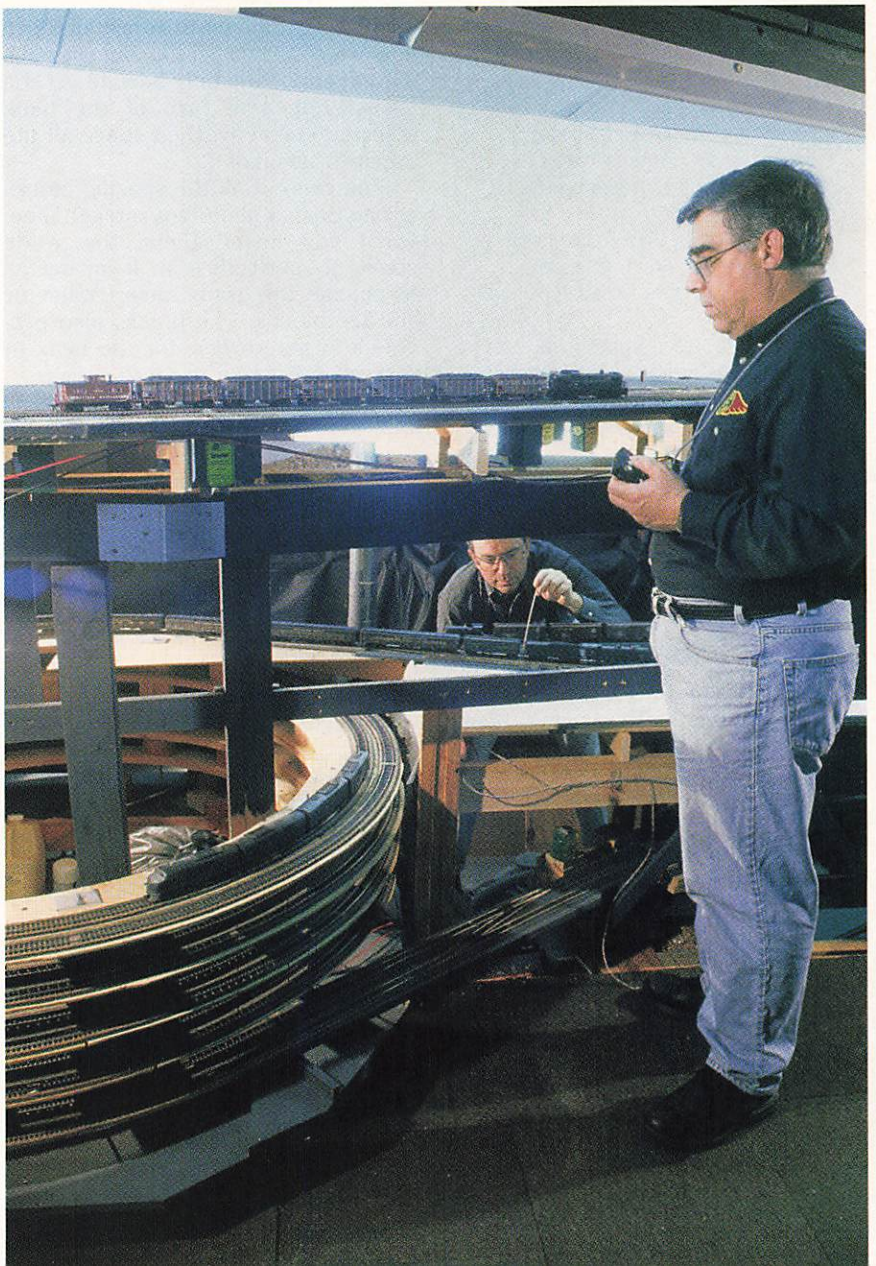
Learning points

- A mushroom design keeps the viewing height of the layout relatively constant by changing the floor level.
- In a mushroom layout, scenes interlock horizontally so only one level can be seen from either side.
- Visualizing the three-dimensional track plan of a mushroom design, then building its support structure, is more challenging than conventional layout construction.

The Rail-Lynx legacy

The development and production of the Rail-Lynx infrared system continues under Shawn Leichliter, Rail-Lynx, 327 W. Johnson St., Allentown, PA 18103-6849, phone 610-351-0672, e-mail raillynx@rcn.com.

These views at Huntington, **right,** and Elkins, **lower right,** show the double-track helix to the lower staging yard. Jerry planned to conceal the lower level from the upper with backdrops and fascia which are missing in the lower photo. The helix was meant to be concealed from both levels.



the benchwork height 54". That makes it easy to uncouple the helpers, even though the railroad is 74" off the floor.

The siding on the grade poses some interesting problems for the dispatcher. Is it really a good idea to stop an upgrade coal drag, which might have a mid-train helper and a pusher, for a meet? Would it be better to hold a downhill train at the top? These are interesting operational concerns that can be found on full-size railroads.

Henry: *Is it difficult for separate engine crews to control locomotives placed throughout the train?*

Jerry: As I designed the railroad, I started to think about a suitable control system. I had a lot of exposure to popular command-control systems (this was before many wireless throttles were available) but I didn't like the dangling, tangled cords used on plug-and-chug handheld throttle units. So I developed the Rail-Lynx system with wireless infrared throttles.

I find crews using wireless throttles stay closer to their trains, instead of standing at the end of a peninsula while letting trains run to the far end and back. Wireless throttles have been the key to successful helper operations.

Helix and staging

Henry: *You have a helix to one lower staging yard. How did you build that?*

Jerry: I used threaded rods and slipped wood spacer blocks (with holes drilled through them) onto each rod as I added the helix roadbed.

I made a ¾" inner helix "backbone" that is about 1½" wide. This provides a stiff support for the track surface,

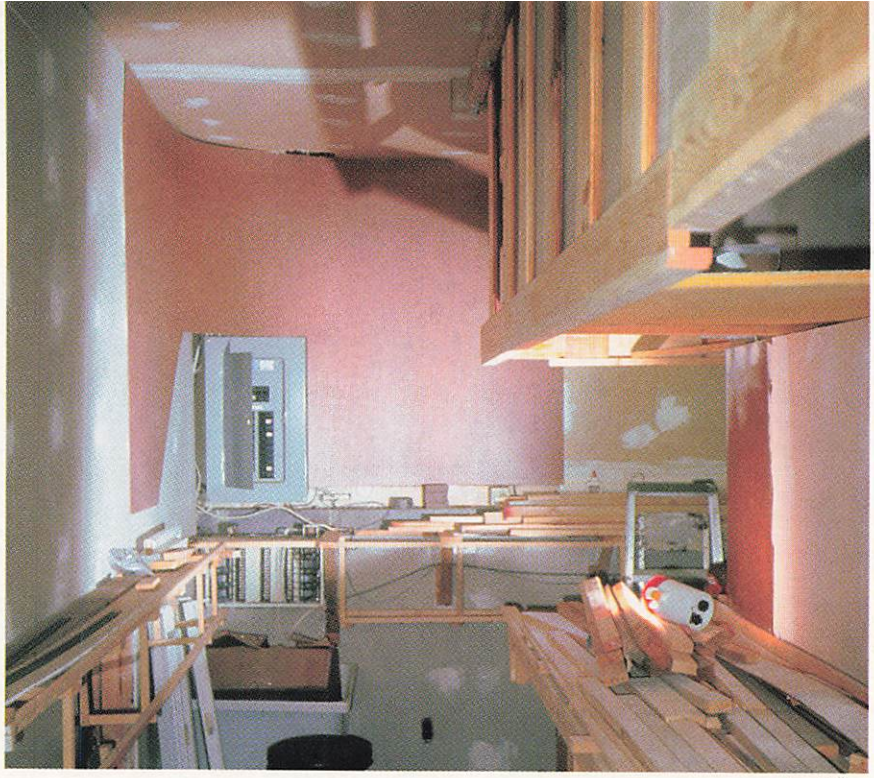
Bellina's mushroom design

Good points:

- Long main line and wide aisles.
- Linear design with no running through the same scene twice.
- Two-level design without the appearance of a shelf over a shelf.
- Optimal viewing and operating height on each deck.
- Good isolation or separation between towns and scenes.
- Strong sense of going from one place to another.
- No duckunders.
- No helix on the modeled part of the layout.
- Long grade for helper operations, which Jerry enjoyed.

Bad points:

- Significant design and construction challenge.
- Required strong raised floor to support multiple or large operators.
- Room had to have an overall ceiling height of at least eight feet.
- Beams, pipes, and ductwork caused some nod-unders on the upper level.
- Required more than 200 linear-feet of lighting, which ruled out incandescent lights because of heat build-up.
- Heat build-up on upper level required fans for air circulation – quiet fans minimized noise.
- The locations of Elkins and Huntington made both yards fairly short, about 16 feet in length.
- 30" aisles were tight in areas around the yards where operators tended to congregate. – *H. F.*



Jerry Bellina

The hangers for the upper deck and ceiling attachment beam are visible in this under-construction view.

which is made from 5mm lauan plywood screwed to the ¾" plywood and cantilevered off the backbone. This gives a very thin track support surface, allowing less vertical separation and thus a reduced grade.

My helix has 30" inner and 33" outer radii, and the grade is under 2 percent. It's supported only on the inner backbone side, and after three years there's no noticeable droop, even though it often holds several staged trains for weeks at a time.

The helix is double-tracked, and since its five-plus turns add the equivalent of about four staging tracks, I use it to stage trains that run early in a session. The track has to be laid as the helix is built – it's really tough later.

It's fairly difficult to adjust all those nuts to get an even grade, but with this construction, you only have to get the lowest full-circle turn of the helix adjusted correctly, then space all the upper turns off of it.

You can cut all the spacing blocks at one time, a major advantage. Then, when you install them, the grade comes out perfectly even. If you decide to change the grade, insert taller or shorter blocks. The blocks also provide a larger surface for the helix to rest on.

Henry: *Since you run trains long enough to need helpers on the modeled part of the railroad, do you ever have trouble getting trains up the helix?*

Jerry: The helix grade is only 1.9 percent, but we are running 25-car trains. If we put a single locomotive on the train, it may stall on the helix. So Jeff Mutter's wife, Marilyn, sewed some lead strips into denim pouches we dubbed "Helix Helpers." They're placed on top of locomotives like a set of saddlebags to add extra weight and enough traction to get up the helix. We use a staging operator, so the road engineer doesn't see this unrealistic subterfuge or deal with the long run up or down the helix.

High and low staging

Henry: *One of your staging yards is only two feet off the floor. Has this been the cause of any problems?*

Jerry: I originally planned only 4" of clearance between the lower staging yard and the modeled part of the railroad at 48", but I've operated on layouts with very tightly spaced staging, and it's a real pain if you have to look in. You usually have to move whatever trains are in front to get to, or even see, any trains farther back.

I therefore put the staging yard 24" off the floor, which took only two more turns on the helix. That left me with an opening about 18" high, which allows you to look in at the seven tracks and see each train without bending over.

As an aside, a visiting yardmaster operated the yard for over three hours and never noticed the staging below, even though it's not covered. It is painted flat black, and many visitors have to have it pointed out to them.

Henry: *How about the staging yard that's eight feet off the floor? Any problems there?*

Jerry: I use an inexpensive mini TV camera (a 1½"-square camera cost me $33) and monitor, plus an easy-to-use turnout control panel, to handle movements up there. This works quite well, although it can be somewhat disconcerting to new operators.

We stage the first few trains for each session one behind the other on the long lead running between the upper yard and Elkins. On the other end of the railroad, we do the same thing on the helix. This sequenced staging works very well.

Innovative solutions

Henry: *Why have you extended the fascias at the ends of your peninsulas up to the ceiling?*

Jerry Bellina

The early construction photo above shows how substantial lumber sizes were used to ensure solid floors and upper-level benchwork. Floor joists were 2 x 6s.

Paul Dolkos

Kay Bellina supported and celebrated husband Jerry's many achievements. When deadlines loomed, she helped him build the West Virginia Western.

Jerry: Don Mitchell calls these "Bellina-drops," although I'm fairly certain I'm not the first one to do this. From the end of a peninsula, operators can typically look down both sides, but I wanted to create a sense of isolation. Once you're in the small alcoves created by the peninsula-end view blocks, you can't see anything but scenery. [See the "Bellina-drop" illustrations on page 47. – *Ed.*]

Henry: *Does a mushroom design cause any ventilation problems?*

Jerry: It's an important consideration. An opening just above the raised upper level floor allows the air to flow through all areas of the railroad.

I removed one panel of the garage door and installed a 24" reversible fan. To use it I open a window at the other end of the railroad, remove an insulated plug in front of the fan (which keeps heat in during the winter), and run the fan to pull in outside air.

The outside temperature was about 90 degrees during a recent operating session, and the railroad room temperature started at about 78. A large group of operators showed up for the session., and after an hour it started to get hot. As soon as I fired up the fan, however, the room cooled to the point where everyone seemed to be comfortable.

Henry: *How did you achieve even lighting on all the levels?*

Jerry: I was very concerned about the lighting, especially on the climb along the four perimeter walls. I didn't want the intensity of the lighting to increase as the track climbed and got closer to lights on the ceiling.

To avoid this, I built the equivalent of another deck for the lights above the climbing benchwork. This deck climbs at the same rate, thus maintaining the same spacing between track and lights.

I had to put a "bottom" in the lighting deck so you wouldn't be able to see up through it, and I've had several visitors ask whether there is still more track above the lighting deck.

Mushroom accomplishments

Henry: *What are your favorite features of the layout?*

Jerry: I like the isolation between the beginning and the end of the run. An operator never sees the end point when entering the room and never sees the starting point upon exiting. This gives the feeling of having gone somewhere while running a train, instead of sensing that you have just walked around the room and returned to the same spot.

I also like the isolation between various points on the railroad. As many as six crews can be operating and not see each other. If you are waiting in a passing siding, you are not aware of trains that are supposed to be miles away.

And I like the fact the part of the railroad where there will be scenery doesn't have any track hidden in a helix track. The trains are always in view of the operators.

Henry: *It looks as though you're continuing to add to the railroad.*

Jerry: That's true. We haven't been operating for the last few months while we add to the yard at Huntington and finish the yard at Elkins. We're about one good night of wiring away from getting the railroad back into service. I can't wait to see the West Virginia Western operating again. MRP

Author Henry Freeman, a journalist for over 35 years, was the founding sports editor of USA Today *and is now editor of* The Journal News *in Westchester County, N. Y.*

Henry wrote the article "Research in the information age," published in Model Railroad Planning 2001. *He models the Baltimore & Ohio's Cumberland Division as it was in 1956.*

More on mushrooms

Here are some other articles on designing a mushroom layout:

- "Meet the mushroom," *20 Custom Designed Track Plans,* by John Armstrong (Kalmbach Books), page 68 (originally in the October 1987 *Model Railroader,* page 80).
- "Western Colorado Railway – a mushroom in the bedroom," *20 Custom Designed Track Plans,* by John Armstrong (Kalmbach Books), page 24 (originally "A mushroom in the bedroom" in the February 1993 MR, page 114).
- "Investigating the mushroom," by Joe Fugate, MR, January 1997, page 80, and February 1997, page 110.
- "Mushroom plan for a logging branch," by Joe Fugate, MRP 1998, page 46. – *H. F.*

A RAILROAD YOU CAN MODEL:

the Lehigh & New

England

A layout plan for the Tamaqua Extension of this hard-coal hauler

By Jim Hertzog

The lead unit's paint betraying failing finances, Lehigh & New England FA- and FB-1s ease empty hoppers westbound across Lehigh Gap Bridge.

Both photos: Dave Augsburger

Above: A westbound slows to work the siding at Andreas, Pa., a scene typical of the entire LNE. Visible are the depot, team track, and loading platform.

Left: Earlier, engine 703 thundered past the sand-loading ramp at Andreas.

It's not hard to like a railroad that depended on an all-Alco diesel roster to haul freight and hard coal through the verdant northern Appalachians. The Lehigh & New England RR boasted a modest fleet of FA-1s, RS-2s, and S-2s. Before that, it depended on a steam fleet that ranged from Camelbacks to hulking conventional-cab 2-8-0s, and even four ex-Pennsylvania RR Mikados.

Unfortunately, the anthracite business soured, and with it the LNE's fortunes. By 1961, it was a "fallen flag" – abandoned. But what a grand railroad it was while it lasted!

Poughkeepsie connection

The Lehigh & New England grew out of a series of efforts in the late 1800s to connect Harrisburg, Pennsylvania's capital, with Boston. In 1904, the Lehigh Coal & Navigation Co. got control of the LNE and two connecting lines. It merged them as a means of getting its anthracite, or "hard," coal out of the eastern Appalachians by rail.

The merged line extended from Maybrook, N. Y., where it connected with the New York, New Haven & Hartford, west to the coalfields around Tamaqua, Pa. The 178-mile line continued to Hauto, Pa., where it interchanged with the Central RR of New Jersey (CNJ). A major branch headed south from Benders Junction to reach the cities of Allentown and Bethlehem, as well as a power plant near Martins Creek on the Delaware River, and some cement plants.

The railroad's general offices and shops were located just west of the Delaware River crossing at Pen Argyl ("ar-jill"). The cavernous shop buildings still stand today, four decades after the railroad ceased operations.

The LNE traversed three distinct regions. From Pen Argyl to Maybrook, it was primarily a bridge route to and from New England. The key to this line's feasibility was a long bridge that towered over the Hudson River at Poughkeepsie, N. Y. This bridge was built by the Central New England (later New Haven) and opened in 1889. It allowed rail traffic to and from New

William Price

Lehigh New England equipment from locomotives to cabooses sported sharp paint schemes. Bright-red caboose 571 had a yellow stripe and red, white, and black herald in June 1950. The roof was black.

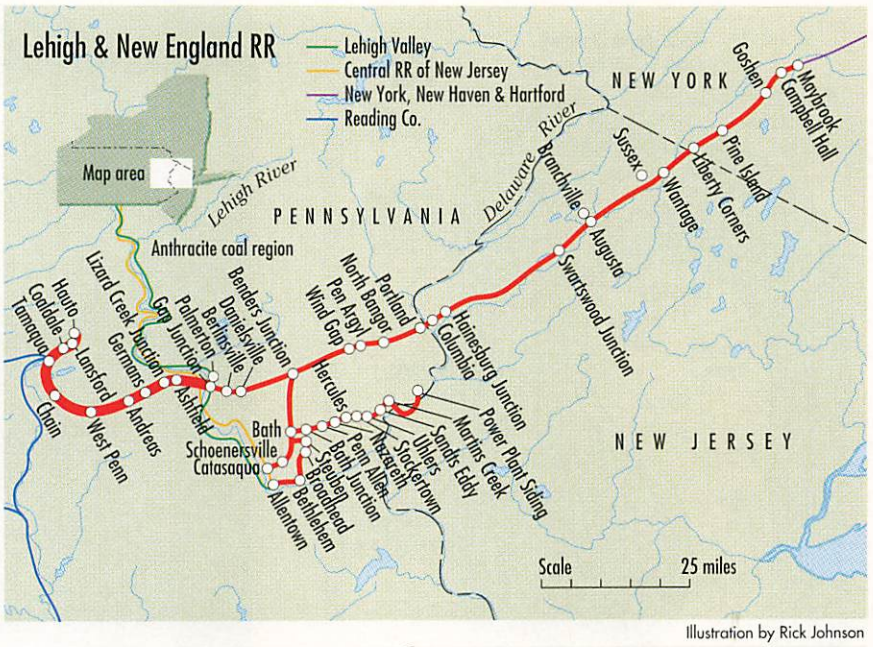
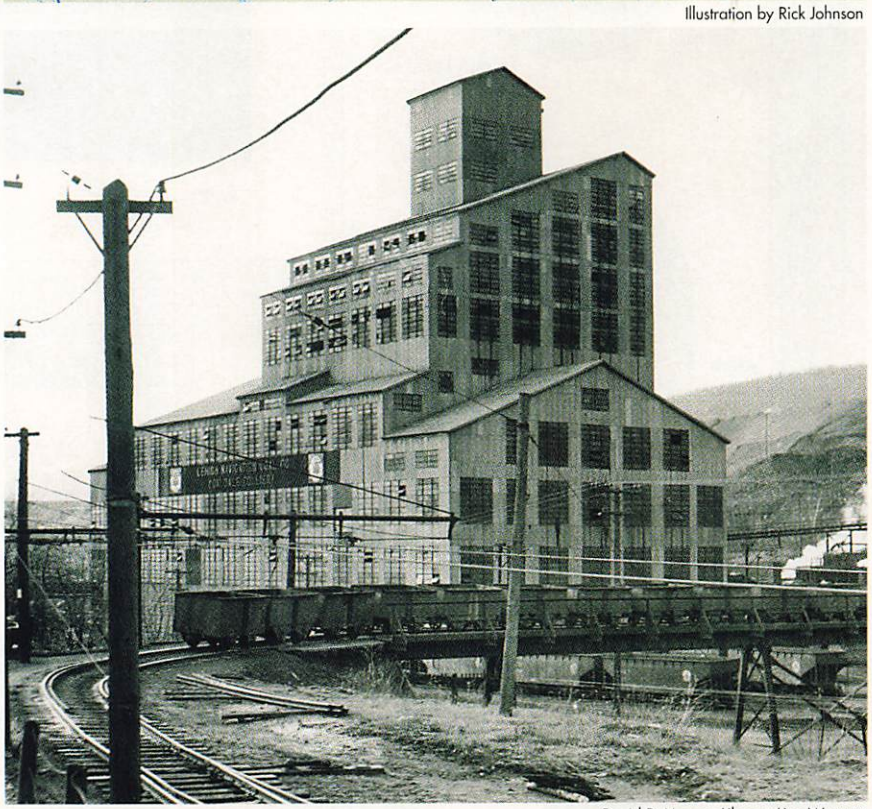


Illustration by Rick Johnson



David P. Morgan Library: Linn Westcott

Breaker, or colliery, No. 8 at Coaldale, Pa., was a towering structure served by a narrow gauge mine railroad.

England to bypass the congestion of New York City.

Heading west and then south from Pen Argyl to Bethlehem, the line serviced the cement industry, including huge cement plants at Stockertown and Nazareth. From Pen Argyl west, the railroad ran to the anthracite fields of the Panther Valley near Tamaqua.

This last section was a 32-mile line built west from the LNE's original western terminus near Slatington. Known as the Tamaqua Extension, it cost $3 million dollars – a lot of money in those days – and required the construction of a towering deck-truss bridge over the Lehigh River at Lehigh Gap, Pa.

At Lehigh Gap, the LNE also crossed high above the CNJ and Lehigh Valley railroads, and it interchanged with the shortline Chestnut Ridge RR at Palmerton via a branch off the east end of the viaduct that clung to a rocky ledge.

In New Jersey, the LNE used trackage rights over the New York, Susquehanna & Western from Hainesburg northeast to Swartswood Junction. It was an Alco fan's dream when A-B-B-A sets of LNE cab units met four- or five-unit consists of Susquehanna RS-1s.

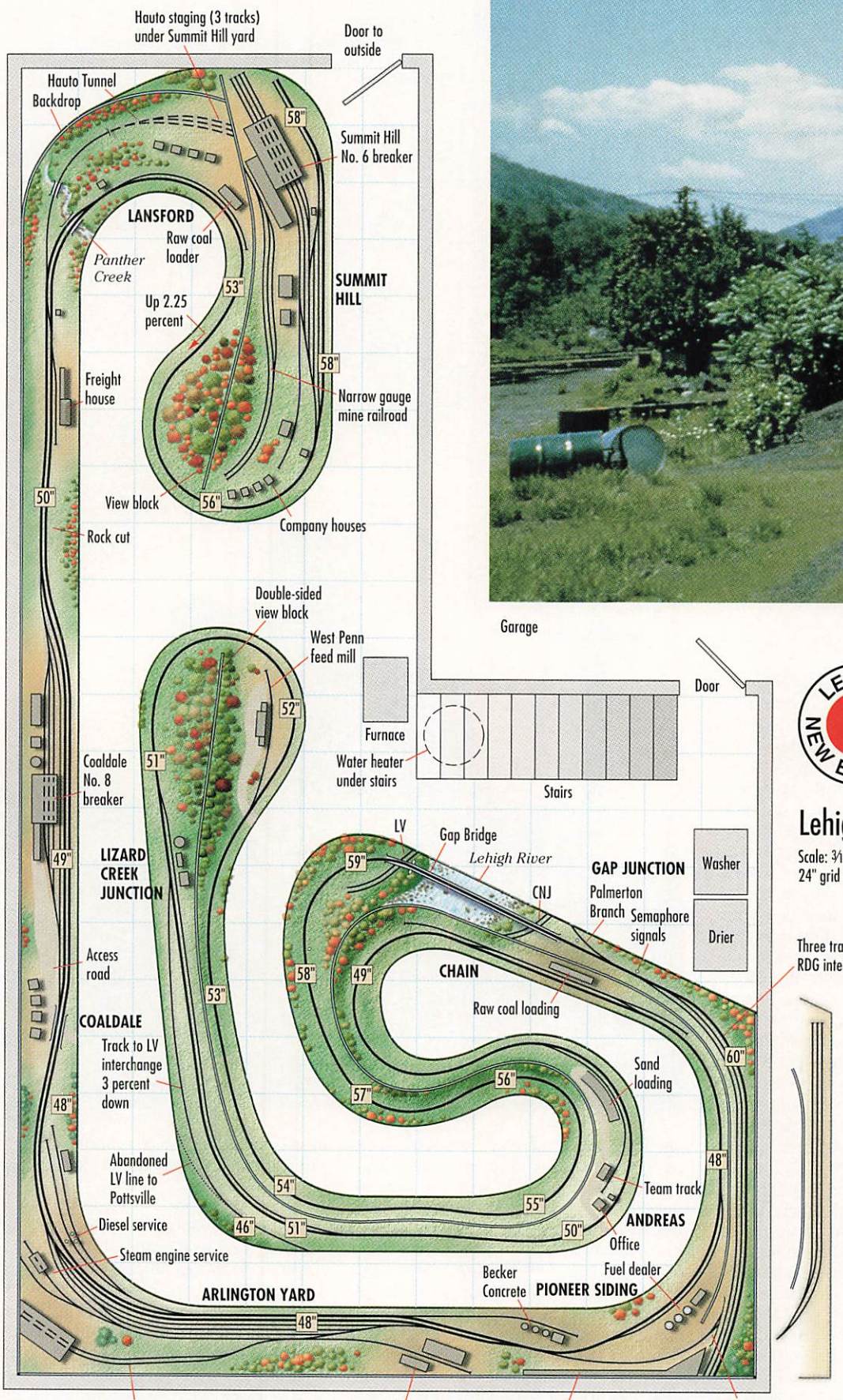
As anthracite loadings declined following World War II, the fortunes of the LNE and its parent company sagged as well. The railroad applied to the Interstate Commerce Commission for abandonment in June 1960. The CNJ, which already leased its Pennsylvania trackage from the same coal company, took over key portions of the coal lines.

October 31, 1961, was the official date for the end of operations. Salzburg began scrapping unused parts of the line in early 1962. The CNJ operated ex-LNE trackage in Pennsylvania for another decade. Then they, too, ceased operations in the Keystone State.

Modeling the LNE

From 1980 to 1996, I modeled the LNE's Tamaqua Extension in HO. (See the August 1993 *Model Railroader*.) As a young, lone-wolf modeler back then, I could overlook its narrow aisles, duck-unders, and DC cab control.

By 1993, however, the layout's flaws were becoming ever more apparent. A group of friends had been coming over for monthly operating sessions. The lack of operating flexibility caused by



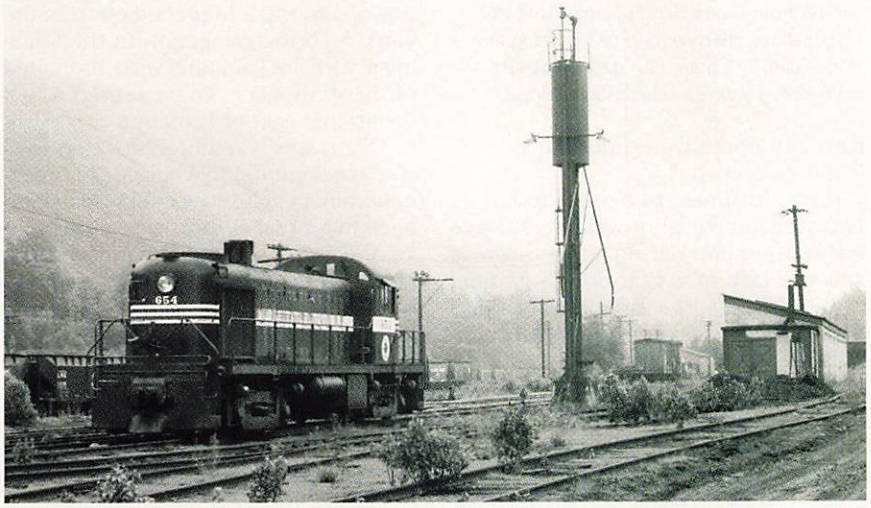
LEHIGH NEW ENGLAND

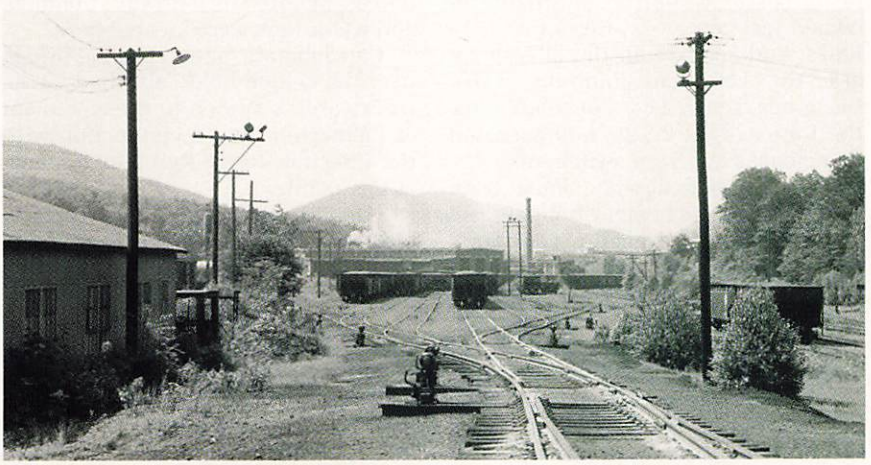
Lehigh & New England

Scale: 3/16" = 1'-0"
24" grid

Illustration by Rick Johnson and Jay Smith

Three photos: Dave Augsburger





Above: Engine 654, one of a baker's dozen RS-2s on the LNE, weighs coal at the hump yard at Arlington in June 1961.

Left: The 654 later paused by the fuel and sand tracks at Arlington.

Below: Nine-track Arlington Yard, seen from the hump, had arrival and departure tracks off to the right.

cab-control wiring became increasingly apparent, and the duckunders became more of a pain, literally and figuratively. It was time to design a new model railroad.

Although I did develop a new track plan, a move to a larger basement was in the offing. My interest in modeling the Reading was also growing, as I explained in "Locust Summit legacy" in MODEL RAILROAD PLANNING 1998, so the LNE was abandoned for a second time. By sharing some of my ideas for a new and improved LNE layout, however, perhaps it will rise again.

Design resources

I started the design effort by noting what an LNE employee timetable could tell me about stations, offices, sidings, and mileage. I used that information to create a schematic diagram showing key areas I'd want to model. This was helpful as I tried to locate major features in the available space. Numerous trips along the LNE right-of-way not far

Both photos: Jim Hertzog

Scenes from Jim Hertzog's former LNE HO layout show, **above**, an FA-1 passing the truck dump at Chain, Pa., and **opposite**, an A-B-A consist on Lehigh Gap Bridge.

Learning points

- Designing a railroad that you're unlikely to build can be a rewarding activity nevertheless.
- Focusing on a small part of a small railroad ensures that most of its signature features can be modeled.
- Like those who worked for a railroad, those who photographed it may be excellent sources of information.

LNE resources

The Lehigh & New England RR: A Color Retrospective, by Douglas Lilly, Garrigues House Publishers

The Lehigh & New England RR, by Ed Crist and John Krause, Carstens Publications

Steam on the Anthracite Roads, by Mike Eagleson, Quadrant Press

Eastern Steam Pictorial – The Anthracite Roads, by Bert Pennypacker, D. Carleton Books

History of the Lehigh & New England RR Co., edited by Randolph L. Kulp, Lehigh Valley Chapter, National Ry. Historical Society

Flags, Diamonds & Statues magazine, published by the Anthracite Railroads Historical Society

from my home were informative and, in a way, a bit sad.

I was fortunate to be able to talk to two well-known photographers, Dave Augsburger and Kermit Geary Sr., who saw the LNE in action during its final days. I also read as many books and magazine articles on the LNE as I could locate (see box at left).

The LNE is a manageable project from many aspects. Its relatively short length makes it more than a short line but less daunting than many larger Class 1 roads. Modeling a major part of its roster would be affordable. It owned just ten FA-1s, three FB-1s, 13 RS-2s, and six S-2s. In the late steam era, the LNE had four big 2-10-0 Decapods, seven 2-8-0 Consolidations, the four ex-PRR 2-8-2s, and assorted Camelbacks and yard switchers.

In the LNE's heyday, most train watchers saw its cement hoppers roll past; they were its signature cars. For a road of its size it also had a sizable roster of boxcars and gondolas. Most of its cabooses were wood and based on a United States Railway Administration design. It did have five so-called "Northeastern" steel cabooses, built to RDG specs, as also used by the LV and Western Maryland, among others.

Models of the diesels and rolling stock used by the LNE are readily available in HO and N scales. Steam-era modeling would be more challenging.

Key locations

There were several important locations along the Tamaqua Extension. Summit Hill, Pa., for example, was the site of the No. 6 breaker (hard-coal preparation plant) that closed in the 1950s. It was located at the summit of a steep grade at the end of the line.

Lansford had a small yard and coal-loading area plus an LNE freight house.

Tunnel Junction featured a wye that branched off the main and crossed over a small creek before entering Hauto Tunnel to reach the CNJ. There was a small yard at Hauto.

Coaldale was home to the massive No. 8 breaker, which provided a large amount of coal traffic until it closed in the late 1950s.

Arlington Yard had a large classification yard along with a roundhouse and simple diesel-servicing area. All west-end operations were based out of here. A line to the Greenwood No. 14 breaker, still operating when the LNE was abandoned, branched off from the yard. A short connection to the Reading's yard in Tamaqua also branched off here. Pioneer Siding served a fuel dealer just east of Tamaqua.

Chain was a remotely located raw-coal truck dumping wharf for independent miners. This raw coal was hauled back to a breaker for processing.

Andreas was a small hamlet with a train-order office. Refractory-quality sand, used in foundries and the chemical industry, was trucked to a loading platform here.

Lizard Creek Junction was located near the small village of Semmel (formerly Ashfield). It featured a long passing siding and an important connection with the LV's Pottsville Branch. An office, maintenance-of-way building, and water tank were located here.

Gap Junction, site of the big bridge over the Lehigh River, also had a two-track yard. A branch to the zinc plant at Palmerton (and a connection with the Chestnut Ridge Ry.) left the main at this point.

Gap Junction was one of the few places on the LNE protected by signals: An interlocking plant with six semaphores guarded all movements.

Tamaqua Extension plan

My negative experiences with duck-unders convinced me of the desirability of a walk-in linear plan. The LNE ran through isolated rural country, so hav-

ing a train traverse each scene only once is another plus for a linear layout design approach.

I located the bridge at Lehigh Gap, a major signature scene, at the base of the basement stairs where visitors would see it as they entered the railroad room. Since I'm focusing on the 32-mile Tamaqua Extension, the railroad east of the Gap is staged. Other key scenes are the Andreas office and siding and the passing track at Lizard Creek Junction.

I'd model the mid-1950s, but backdating to the '40s when steam still ruled the railroad is an appealing option. I'd also model the summer or early fall, requiring deciduous-tree-making skills. Rock castings would also come into play.

Goals would include radio-control Digital Command Control (DCC) with Alco sound decoders – more practical with a small roster. Also, there would be no scenes deeper than 30", no duck-unders, a 30" minimum radius, no. 6 turnouts, layout heights ranging from 48" to 59", and code 83 rail on the main with code 70 elsewhere.

Coal breakers or collieries make appealing scratchbuilding projects, but Walthers' coal mine kit makes excellent kitbashing fodder. A field trip along the line to see what's left and to get a feel for the territory would be interesting and rewarding.

Operation

Train operation would be straightforward. With few trains and a simple pattern of movements, it could be a one-person operation despite its size. However, running it with a small group would add to the fun.

A couple of mainline trains behind FAs would haul loaded coal hoppers east and empties west. Mine turns would work the breakers east of Arlington Yard. Loads would be forwarded to Arlington for classification, and the yard crew would also work the Reading interchange and local industries.

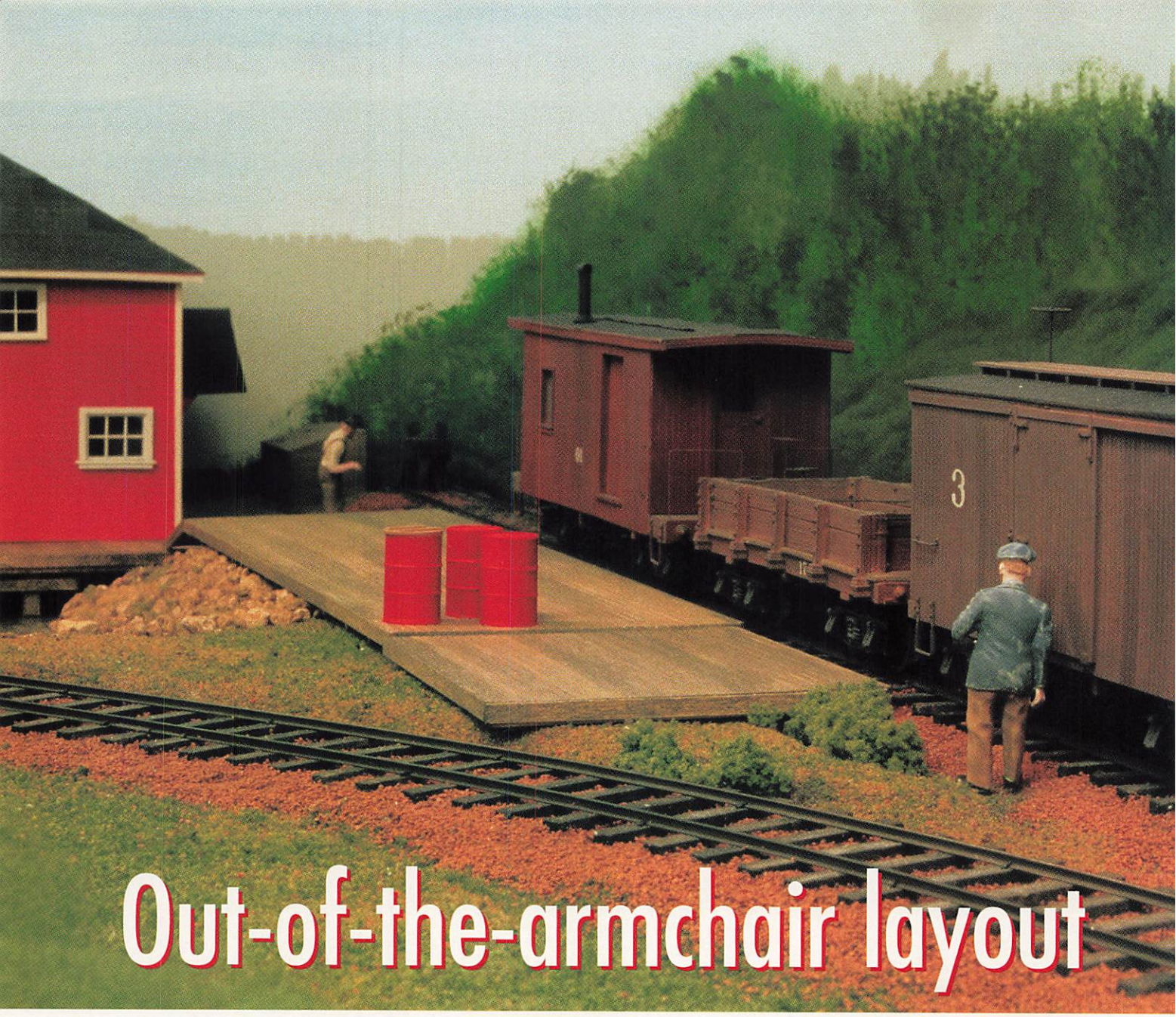
An RS-2 (or a huge 2-10-0 in the steam era) helper could be run west to Lizard Creek Junction to assist the eastbound coal drags. An occasional work extra with a clamshell crane and side-dump cars would be dispatched to Gap Junction to clear the line of the never-ending rock slides.

Although radio headsets could be used for dispatching, an increasing number of modelers are finding that it's more fun to operate a railroad using a printed timetable and written train orders, just as the LNE did. Telephones are ideal for that, but radios can serve as stand-ins if they're normally turned off and left at stations instead of worn by crews.

Most of the traffic would be anthracite coal, of course, but other commodities such as sand, cement, and general freight would play a role.

All in all, this plan should keep three to six crew members busy, and the builder will be able to say with considerable pride that the layout is helping to preserve the history of a noteworthy Eastern railroad. MRP

Jim Hertzog is a prolific modeler of the Eastern coal roads and frequent contributor to the model railroad press. Jim and his wife Gerri live in Mertztown, Pa.; they have two teenagers. Jim is a sales engineer for Electro-Space Fabricators.



Out-of-the-armchair layout

An On3 railroad built as a series of linked "shadow boxes"

By Barry Cott
Model photos by the author

The term "armchair modeler" is unique to model railroading. Why? Admittedly, finding enough space and then planning and building a model railroad of any size requires a high level of dedication. That leads too many of us to remain comfortably ensconced in our chairs watching TV.

I remained an armchair modeler for many years before I found the right combination of premise and layout design that got me started building. Perhaps reviewing the process I went through in designing my On3 Pakesley Mill & Timber Co. will show you at least one path toward greater enjoyment of the hobby.

Layout-design process

To me, the process of layout design consists of two basic parts:

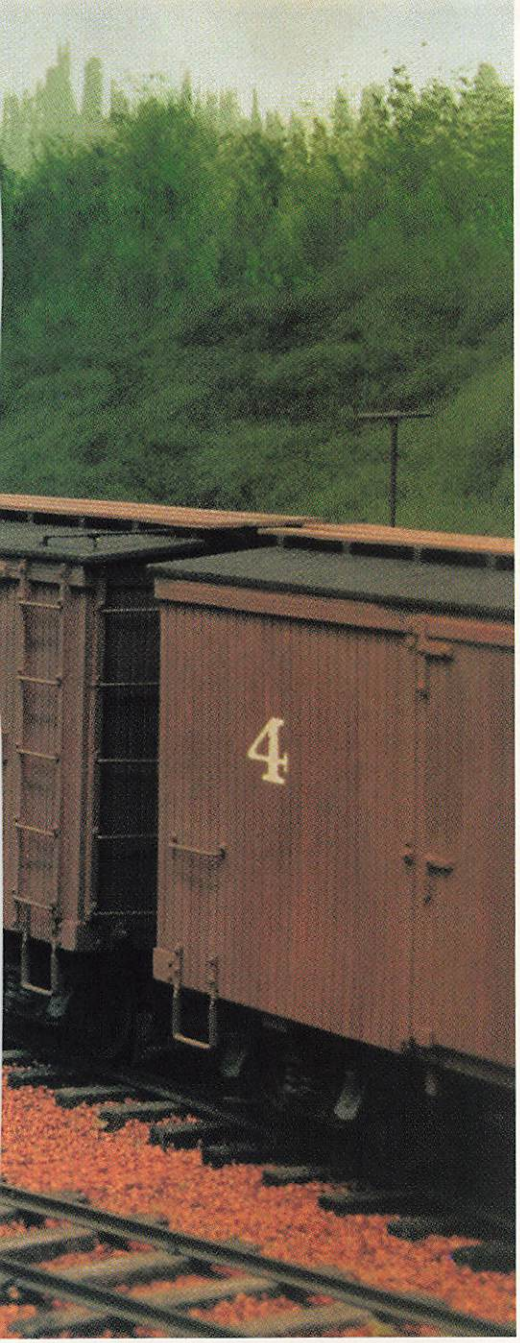
- Determining the era, locale, and prototype of the model railroad – that is, the premise.
- Designing the layout to fit your current space constraints.

Although these two decisions are necessarily related to each other, I believe there is great value in separating them. Think of the model railroads you have read about that have a strong sense of time and place, yet their physical arrangements have changed over the years to fit different footprints due to relocation, more or less available space, or a change of scale.

I'm also striving to create a premise for a model railroad that plays to my strengths and interests, so that I can develop the concept for many years. Within that framework, I'll design or modify a layout to match the space I have available at the time.

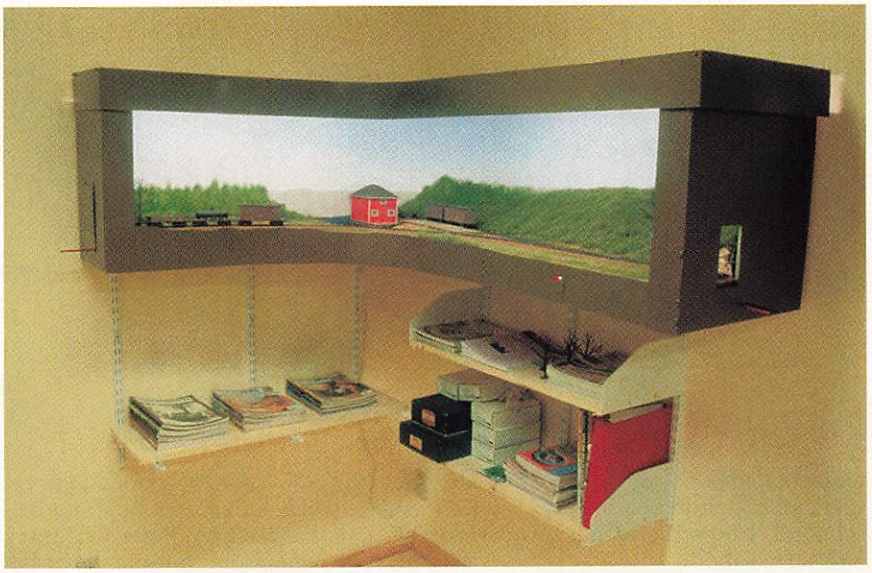
Developing the premise

A good place to start developing a premise is to follow master layout designer John Armstrong's advice and write down our "givens and druthers." "Givens" are the layout parameters that we can't, or won't, readily change; "druthers" are the layout features we



Left: The conductor checks his paperwork before setting out a boxcar at the steamer dock on Barry Cott's On3 Pakesly Mill & Timber Co. layout. Barry developed operational plans in concert with his layout's design to ensure consistency.

Below: The first section of the Pakesley Mill & Timber Co. to be built features the steamer dock in the corner. A water tower will be added on the curve to the left.



would like to have but are prepared to negotiate. Both represent hard choices that we will need to make from a wide variety of possibilities.

Here are mine:

- My favorite model railroad activity is model building, be it rolling stock, structures, or scenery.
- I want prototypical operation, but at a relaxed pace with a small number of people.
- I want a model railroad based on the Key Valley, a short line in the Parry Sound, Ont., area.
- Family and business activities will limit the amount of time I'll be able to spend modeling in the near future.

My list of givens and druthers seemed to best lend itself to a modest model railroad in a fairly large scale such as O. In turn, this led me back to one of my first loves in model railroading: early logging railroads.

The Key Valley Ry.

I spent a lot of time researching prototype railways that had the potential to be the basis for my free-lance model railroad. In the end, I chose the Key Valley Ry., a standard-gauge logging road that ran between the villages of Pakesley and Lost Channel in the Parry Sound district of Ontario between 1917 and 1933. The KVR was only 12 miles long. Its western end met the Canadian Pacific Ry. (CPR) at Pakesley; the eastern end of the KVR was the company town of Lost Channel.

My introduction to the KVR came one summer in the early 1970s from an article in the Parry Sound newspaper. In the decades that followed, I've learned as much as I can about the KVR and its operations. It wasn't particularly easy: To date, I've uncovered only ten photographs of the KVR and its equipment plus a few mentions in a couple of Parry Sound historical books, the best being John Macfie's *Parry Sound Logging Days*, published in 1987 by Boston Mills Press.

Despite the lack of information, I felt the Key Valley was a good prototype on which to base a model railroad because it perfectly fit my needs. The operation was a small one, yet it ran a variety of equipment in a region in which I'm very interested.

History of the KVR

The Lauder, Spears & Howland Co. started construction of the Key Valley Ry. in 1914 as a means of transporting logs and lumber to and from the company's lumber mill at Lost Channel.

Before the railway was built, the company used a rugged bush trail to haul lumber to a siding on the Canadian National. The trail proved difficult to maintain and was often impassable.

The new railroad, named the Key Valley Ry. for the narrow valley the roadbed traversed, would be built directly west from Lost Channel to connect with the CPR at Pakesley. Unfortunately, the construction costs of the railway almost bankrupted Lauder, Spears & Howland. In 1917, Schroeder Mills & Timber Co. purchased the financially troubled Lauder Co. and finished the railway.

In the 1920s, Lost Channel was a bustling community of 300 people. The sawmill was the area's largest. Along with the Schroeder Co.'s. bunkhouses

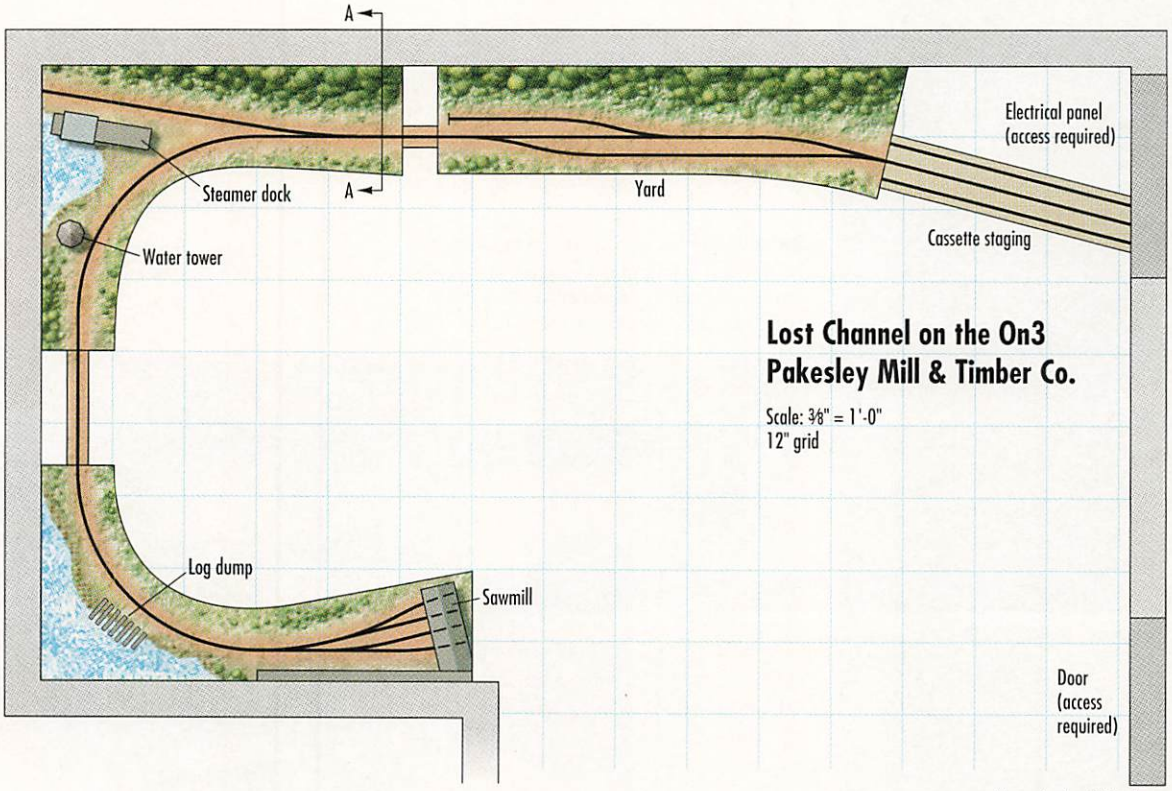


Illustration by Rick Johnson

and cookeries for its workers, Lost Channel had stores, a hospital, and a school. The little backwoods town even had electricity!

The town of Pakesley also grew at the other end of the KVR. Here the Schroeder Co. established large lumber storage yards from which it supplied the Toronto, Detroit, Chicago, and New York markets. In the 1920s, Pakesley grew to include a post office and a hotel. It got a new CPR station in 1924 to handle the increased passenger traffic to and from Lost Channel.

In 1927, the Schroeder Co., perhaps recognizing that its timber reserves were nearing exhaustion, sold out to a new firm, the Pakesley Lumber Co. A fire destroyed the Lost Channel sawmill in 1930, and by 1933 Lost Channel was a ghost town. Pakesley survived into the 1960s as a CPR section-gang location, but by 1970 it too had become a ghost town.

Why On3?

As a big fan of narrow gauge railways, especially the Maine two-footers, I've always kept an eye out for an interesting prototype that fits the narrow gauge mold. While the prototype KVR was standard gauge, it's reasonable to think that the Lauder Co. could have built the line as a narrow gauge carrier to save money.

I prefer the prototype-free-lancing approach to the hobby, as it permits flexibility in modeling locomotives, rolling stock, and so on. Where possible, I model KVR buildings and track arrangement from photos, and I'm careful to use rolling stock and locomotives from the right era.

Why O scale? I like its size for building rolling stock and structures. The drawback is, of course, that O (¼", or 1:48) scale takes up more room than HO (1:87). But the Pakesley Mill & Timber Co. is a simple railway with a low track-to-scenery ratio, so I should be able to recreate the sparseness of the KVR in a relatively small space.

In the late 1990s, I started developing the PM&TCo. concept by building up the rolling stock roster from kits and scratchbuilding. I also started to pull together my research on the KVR and started sketching layout designs.

In 2000, I finally found some time to finish the basement in our home and create a 9 x 15-foot room for the first PM&TCo. layout.

Open-top loads

The prototype Key Valley Ry. was a simple railroad, and the PM&TCo. will be as well. I am a fan of David Barrow's linear design philosophy (June 1995 *Model Railroader*), and I feel that this concept is entirely appropriate for the PM&TCo. Linear design produces a "sincere" type of layout where a model train passes through a scene once, just as trains do in real life.

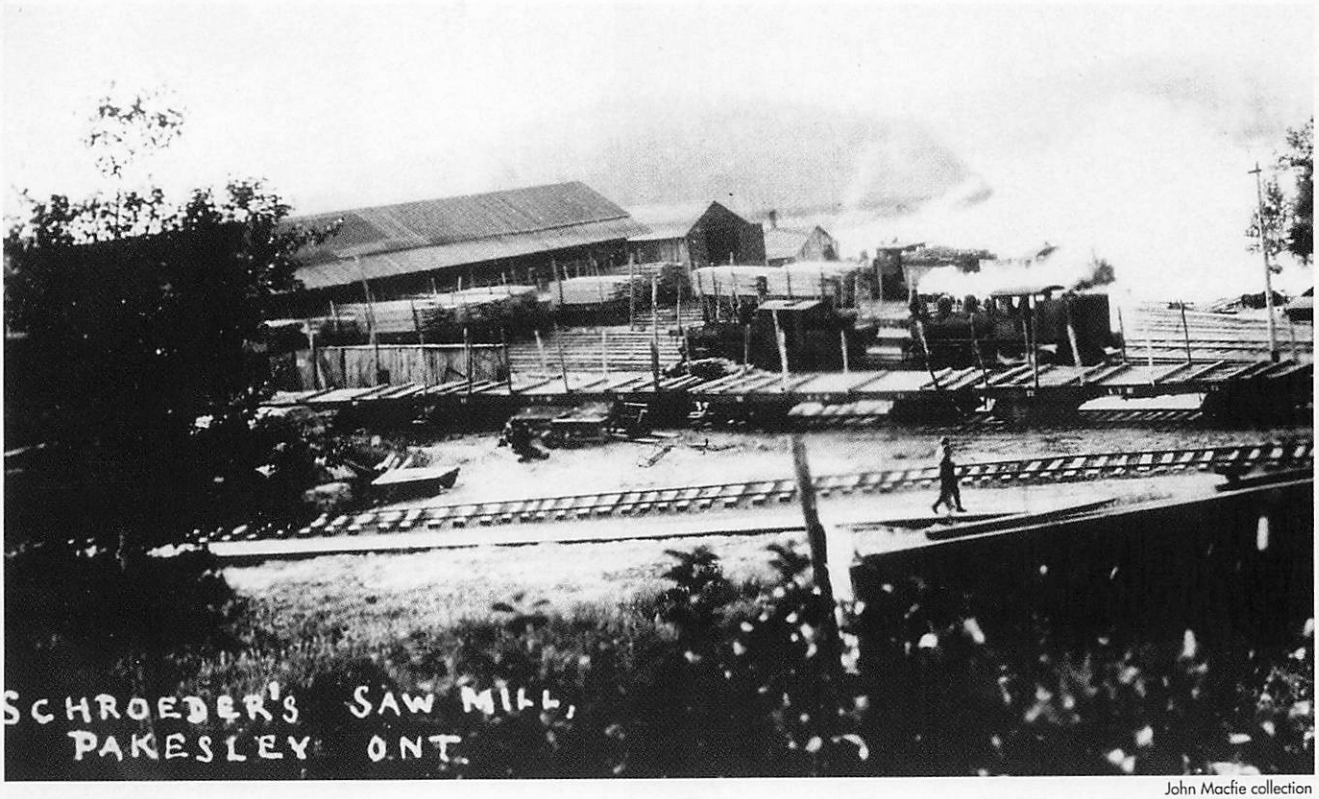
The layout at a glance

Name: Pakesley Mill & Timber Co.
Scale: On3 (1:48, 3-foot gauge)
Size: 9 x 15 feet
Prototype or theme: Key Valley Ry.
Locale: Parry Sound, Ontario
Period: July 1922
Layout style: shadow-box vignettes
Layout height: 54"
Benchwork: ⅜" open grid on shelving units
Roadbed: Homasote on ¾" plywood
Track: handlaid code 70
Length of mainline run: 19 feet
Turnout minimum: no. 6
Minimum curve radius: 30"
Maximum grade: none
Scenery construction: foam, plaster
Backdrop construction: .060" styrene
Control: Digital Command Control (DCC)

The nature of the railroad's business was my biggest design challenge. Much of the traffic is in the form of open-top log and lumber loads. During operating sessions I want to see those logs moving east and freshly sawn lumber returning west.

There were several ways I could accomplish this operation.

First, I could use removable loads that are fiddled on and off at the appropriate places. I felt this wouldn't be the best solution for the PM&TCo. because the wear and tear on finely detailed



John Macfie collection

Above: Schroeder Mills & Timber Co. sawmill at the Lost Channel end of Key Valley was photographed in the early 1920s.

Right: This aerial view shows Lost Channel and its environs in 1928.

rolling stock might be high. A second approach would be fiddling loaded and empty cars on and off the layout. A third method would be John Armstrong's loads-in/empties-out scheme, but I think this would be difficult to include on my small linear layout without adding a lot of hidden track.

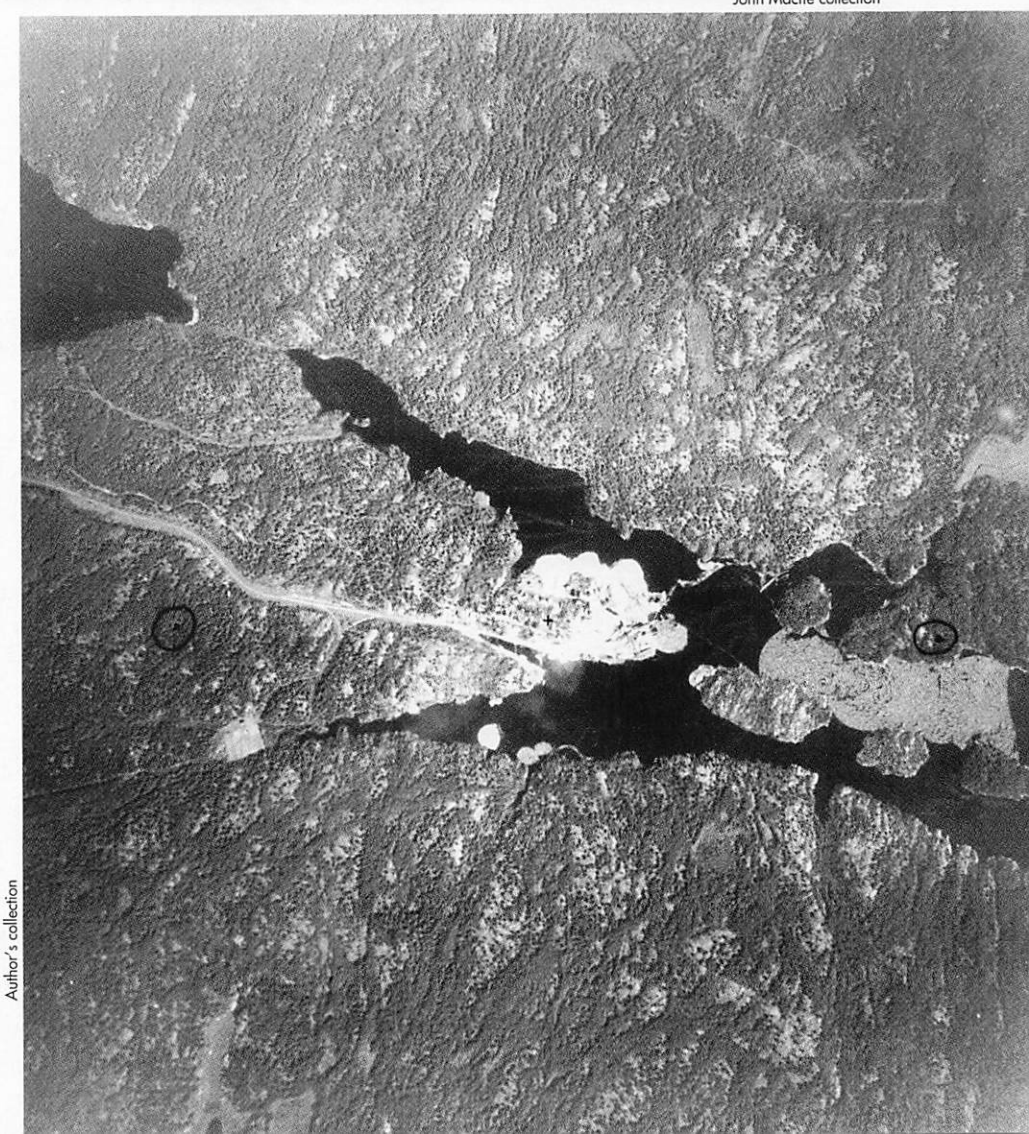
I looked into a fourth option, that of moving cars back to their required starting positions between operating sessions. This method would work well if the load/empty needed to be moved only once per session.

I'm leaning toward the second option, exchanging empty and loaded cars by hand, for my final design.

Small roster

Another concern is that the prototype KVR only had four locomotives active in 1922. Anyone standing trackside for a full day would see the same engines traveling back and forth between Pakesley and Lost Channel.

Given that I don't want to build multiple copies of the same engine, the layout has to have a way of turning locomotives in staging so they can quickly reappear.



Author's collection

John Macfie collection

One of fewer than a dozen photos of the Key Valley Ry. found to date shows Consolidation no. 6 and its proud crew.

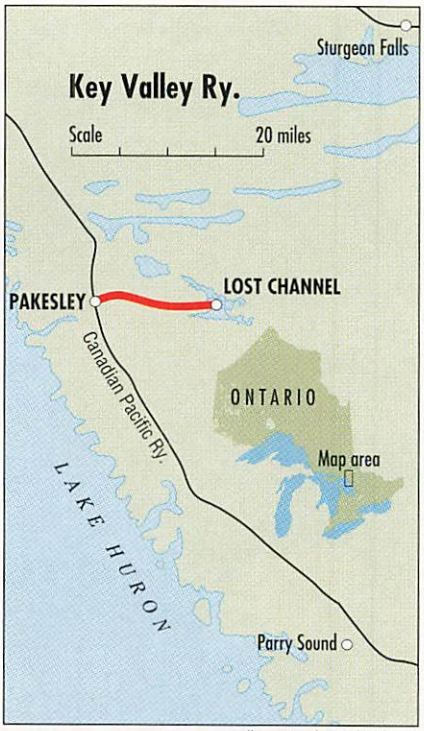


Illustration by Rick Johnson

Bill and Mary Miller's staging yards (MODEL RAILROAD PLANNING 1995 and 1999) are very workable designs. The concept involves a turntable placed at the far end of the staging yard.

I also looked at an alternate approach, the "trackless staging cassettes" described by Paul Dolkos in MRP 1996. This has the advantage of not requiring lengthy yard ladders or space-consuming turntables. I am leaning toward using trackless cassettes as my staging method. The design provides an almost unlimited amount of staging in a very small footprint.

"Linked-up" layout

As I was preparing the layout room in summer 2000, I encountered the bane of all layout builders: a potential change in jobs and cities. Nothing came of it, but it was a reminder that I'm still in a stage of my career where a job change and relocation to another city are distinct possibilities.

That led me to revisit my layout designs to see how they might fare if I had to relocate. I didn't like what I saw: Any layout built to my initial designs would have to be completely scrapped if I moved.

In his book *Small, Smart and Practical Track Plans*, MRP author Iain Rice discusses movability in detail and suggests building small, portable sections that can be linked together to form a full layout. The ultimate extension of this approach is Iain's "Linked-Up Logger" design, which consists of three small sections linked together with short, almost disposable tracks. The sections are designed to be completely self-contained and moved by one or two people. Each is a separate vignette with a full wraparound backdrop and lighting. This, I recognized, would be a good match with my 9 x 15-foot layout room and still be movable.

I've found vintage aerial photos of the KVR invaluable in determining the track arrangement in Lost Channel. For example, the 1928 aerial photo reproduced on page 63 shows three obvious scenic vignettes within Lost Channel:

- The sawmill and log dump.
- The dock siding.
- The "yard."

Lengths of fairly uninteresting mainline track separate each area of interest. These can easily be replaced by simple linking tracks with no real loss of interest. Also note that the yard is really no more than a runaround siding with a single storage spur.

Sectional design

Iain recommends building layout modules or sections no larger than about 2 x 4 feet for ease of transportation. I relaxed this restriction a little to minimize the number of joints within the sections. The sawmill section is approximately 3 x 6 feet, the dock siding 4 x 5 feet, and the yard 2 x 7 feet. A small cart on casters that can be moved to allow access to the electrical panel will support the staging cassette.

The diagram on page 66 shows my best guess at the actual 1928 track

James Ludgate; John Macfie collection

This 1920s view of the KVR hauling logs shows a jammer (at left), which hoisted logs aboard flatcars. The team of horses near the jammer supplied the muscle.

arrangement in Lost Channel versus my model version. I don't have the space for a wye with a minimum radius of 30", so its function will be handled in staging.

Reversing the orientation of the plan from my previous designs, with the operator on the north side of track looking south, allowed me to fit the sawmill section onto the short wall and the staging along the long wall. The track plan shows the position of each section in the room.

Construction methods

With movability an inherent part of the linked-up design, I felt comfortable enough to start building the layout. I followed Iain Rice's suggestion of building the sections out of lightweight plywood and foam. He suggests that ¼" plywood is sufficient, but I had a few sheets of ⅜" lying around. I made four L girders using 3"- and 1½"-wide strips of plywood. For joists or cross pieces I used 3" strips of plywood, and I made sure that all joints in the L girders were overlapped for strength.

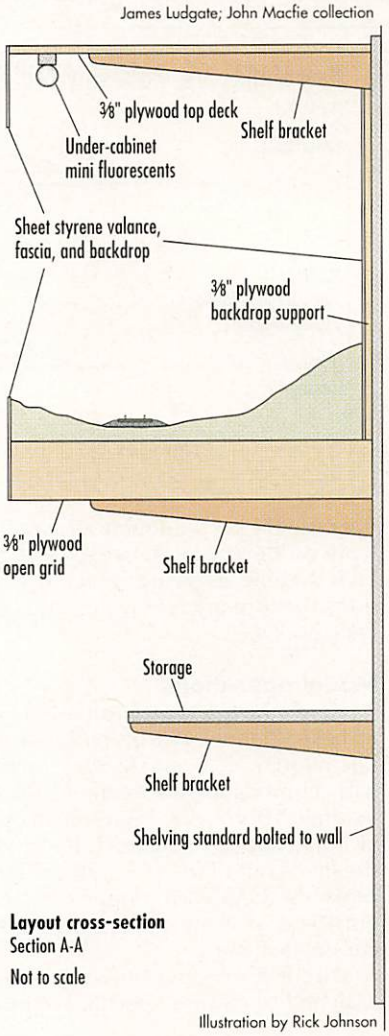
The subroadbed is ⅜" plywood with ½" Homasote on top. All joints were glued together with white glue; I didn't use any nails or other fasteners. To improve the movability of the layout sections, I added 18"-high side and back pieces of plywood. This creates a display cabinet or shadow-box look and supports the backdrop.

After reading a lot of differing opinions on backdrop materials, I decided to try .060" sheet styrene. (See Marty McGuirk's "Back to Basics" column in the April 2000 MR.) I found a company that would cut a 4 x 8-foot sheet of styrene into three 16"-wide strips at no additional charge.

I used latex (water-based) contact cement to glue the styrene to the wooden module structure, which worked very well. Because a single eight-foot length was not long enough for the module, I joined two sheets with an 8" splice plate glued behind them, then filled the small gaps at the joint with plastic putty. For even lighting in the shadow-box I used miniature under-cabinet fluorescent fixtures.

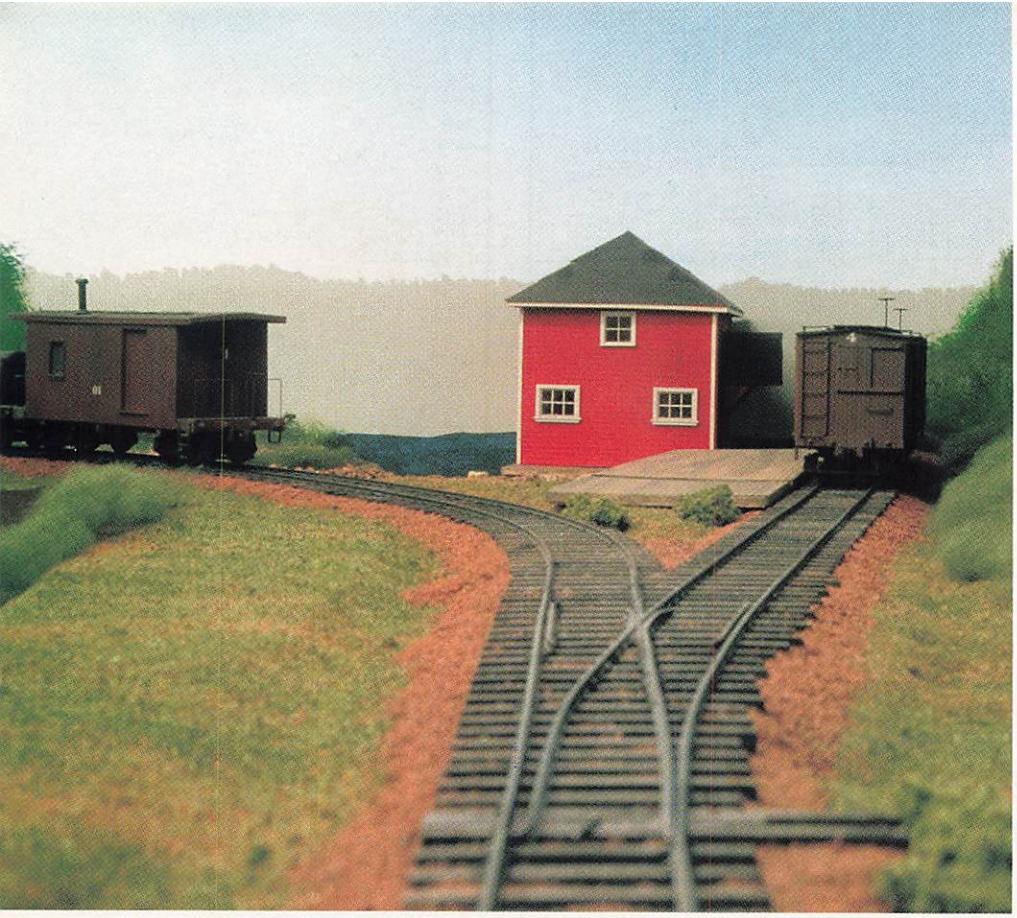
Each section is supported by a robust, double-slot shelving system I purchased at Lee Valley Tools. Similar systems are sold at outlets such as Home Depot. I fastened the vertical strips to the wall studs using ¼" x 2½" lag bolts. The shelving brackets come in different lengths; I'm using 11"- and 14"-long brackets. I used a water level to ensure the brackets were at the same height.

I set the track elevation at 54" from the floor, a nice height for viewing and



Layout cross-section
Section A-A
Not to scale

Illustration by Rick Johnson



A PM&TCo. freight leaves town after spotting a pair of boxcars near the steamer dock at Lost Channel.

Learning points

- The concept or "premise" and the physical design of a layout are related, but consider them separately to allow for changes as available layout space allows.
- Shadow-box construction combines portability with a visually appealing setting for a layout.
- Converting a standard gauge railroad to narrow gauge may offer a practical means of modeling in a larger scale in a smaller space without losing the essence of the prototype.
- Using commercial shelving systems allows layout sections and book shelves to be supported by the same mounting strips.

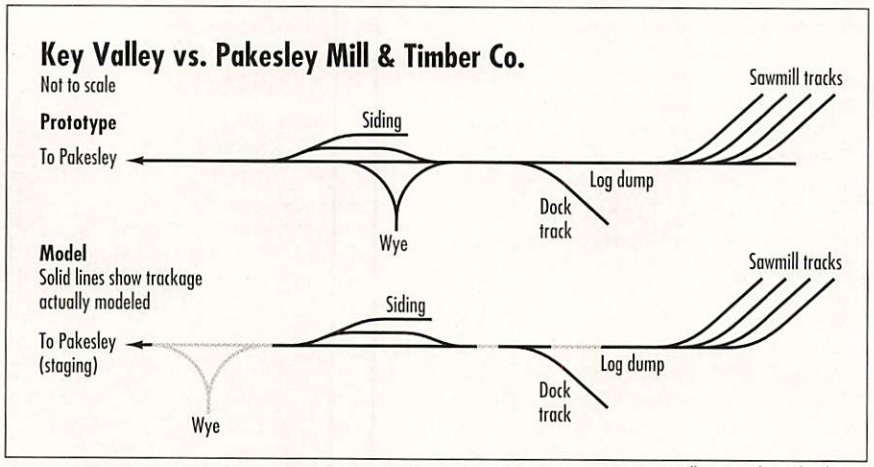


Illustration by Rick Johnson

operating. I keep a footstool handy to work on the layout, however. I've also added some shelving under the sections to store my magazines and reference books.

Model operations

Here's how a typical operating day at Lost Channel will be orchestrated: Locomotive 2, a small Shay, arrives with empty flatcars destined for the sawmill. This engine serves as the yard switcher for Lost Channel. It switches the loads out of the sawmill yard, then replaces them with empties throughout the day. Number 2 spots one flatcar on each spur.

On the KVR, each car was probably assigned to carry a specific grade and dimension of lumber. When the right grade and dimension of board came to a sorter, he would pick it up, then turn and stack it on the appropriate flatcar. When a flatcar was filled, it would be swapped with an empty.

Several trains arrive throughout the day with more flatcar empties and any other cars to be switched in Lost Channel. These trains, headed by no. 5 (a small 2-6-0), drop empties and return to Pakesley with the flatcar loads just switched out by no. 2. Before heading back to Pakesley, no. 5 is turned on the wye and takes on water. At the end of the day, no. 2 grabs any remaining loads and returns to Pakesley to tie up.

Logs are the other major source of freight traffic to Lost Channel. Two or three trains a day of logs arrive at Lost Channel for unloading at the mill's log dump. Again, these trains are headed up by no. 5.

Twice a day, passenger traffic is serviced at the dock siding. Usually, the passenger schedule is handled by a railcar or a small coach behind no. 5. To connect with CPR passenger trains at Pakesley, the passenger trains have scheduled departure and arrival times at Lost Channel.

Progress report

At this writing, I've finished the dock siding section as a test of my design. So far, I'm very happy with the vignette approach. I'll build the yard and staging sections next so I can operate the layout more fully. The sawmill section will be added last.

All in all, I'm satisfied with the way things are going on the PM&TCo. As fellow On3 modeler Dave Adams recently observed, "Planning is great, but building is better." MRP

Barry Cott and Robin Margaret, his wife, live with their two daughters in Calgary, Alberta, where he is a professional engineer in the oil and gas industry. Barry started in N scale and has "worked through many different scales and layout premises before settling on the PM&TCo. in On3." Barry thanks John Macfie for supplying photos from his collection for this article.

Sheri Saxton

Seven-level layout – in a dining room!

If you're going to be unconventional, do it in a big way

By Gary Saxton
Model photos by the author

Gary and his wife, Marlene, share a toast to the memory of the New York, Ontario & Western and its N scale counterpart in their dining room.

Imagine a layout that (1) stays true to the spirit of the prototype, (2) has an area equal to 180 percent of the area of the room it's housed in, (3) has a footprint less than 30 percent of that room's, (4) is nearly 20 scale miles long, and (5) shares, as opposed to takes over, the room.

I call the concept the "library look" – it appears that I have converted the dining room into a library. But instead of books on display, the bookshelves are filling up with a continuous diorama depicting the New York, Ontario & Western in N scale. Due to its complexity, I had to develop

The layout at a glance

Name: New York, Ontario & Western
Scale: N (1:160)
Size: 11 x 12 feet with 6-foot-radius bay
Prototype: NYO&W
Locale: New Jersey, New York, and Pennsylvania
Period/era: 1920s operation, 1950s equipment
Layout style: seven shelves,14 levels, continuous spiral
Layout height: 23" to 72"
Benchwork: J sections on metal shelf brackets
Roadbed: 3/16" custom-cut Homasote
Track: Atlas code 80
Length of mainline run: 710 feet
Turnout minimum: no. 4
Minimum curve radius: 12"
Maximum grade: 2.6 percent on main line
Scenery: rigid expanded styrene foam
Backdrop: integrated into J section
Control system: NCE Digital Command Control

new concepts in benchwork, wiring, scenery construction, and maintenance. I worked on the design for a full 15 months before cutting that first piece of lumber.

Looking for space. . .

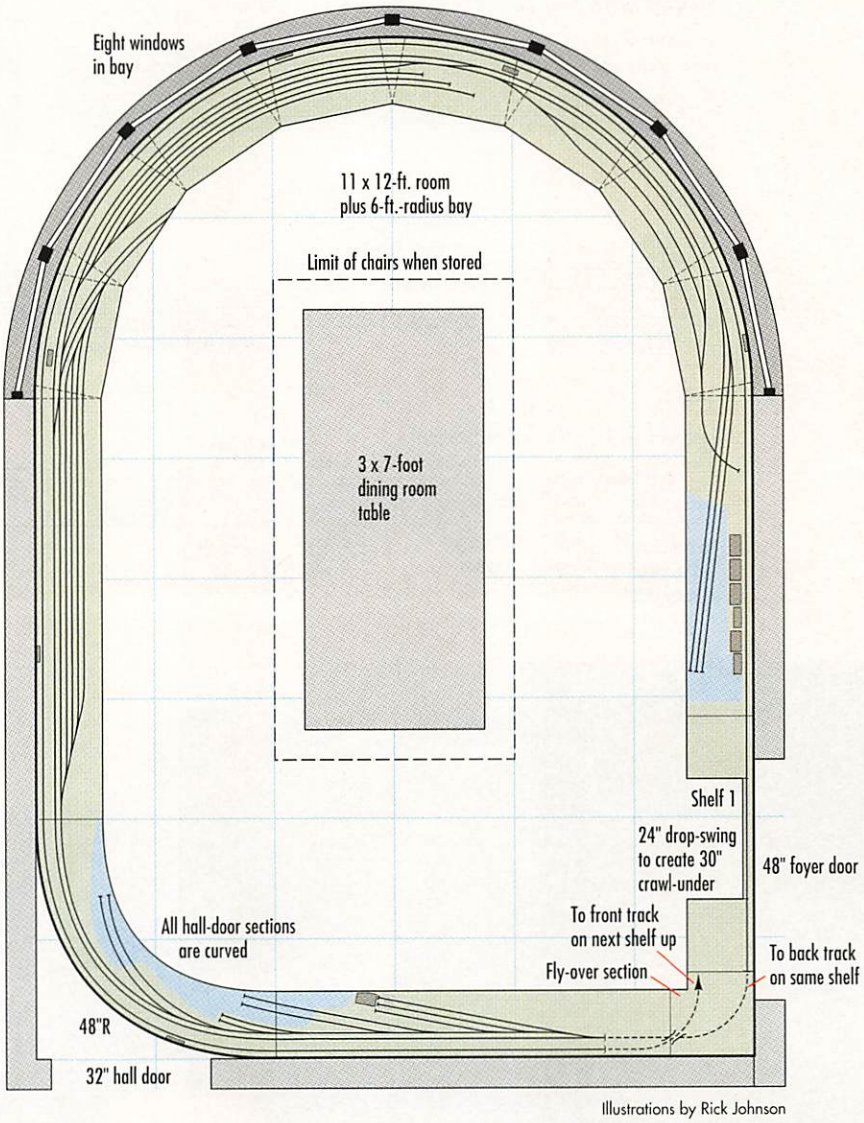
Which comes first: the layout concept or the space to contain it? What happens when you dream BIG but seem to have no acceptable space at all? Let's begin by rounding up the usual suspects:

- Basement – there is none.
- Attic – in Houston? Impractical and expensive.
- Over the garage – prohibited by deed restrictions.
- In the garage – severe humidity swings and contested space.
- Spare bedroom/office – small and contested space.

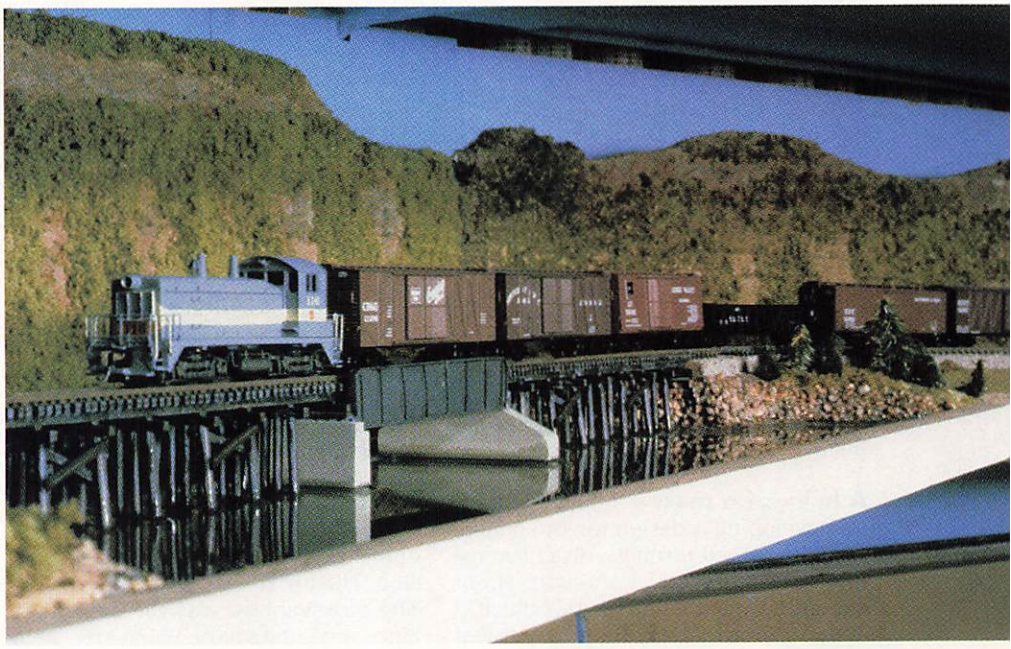
Continuing on, but looking at two unusual suspects:

- Living room – space for only a coffee-table design.
- Dining room – hmmm. To paraphrase Arthur Conan Doyle's Sherlock Holmes, "When all the possibilities have been exhausted, the remaining alternative, no matter how absurd, must be the answer."

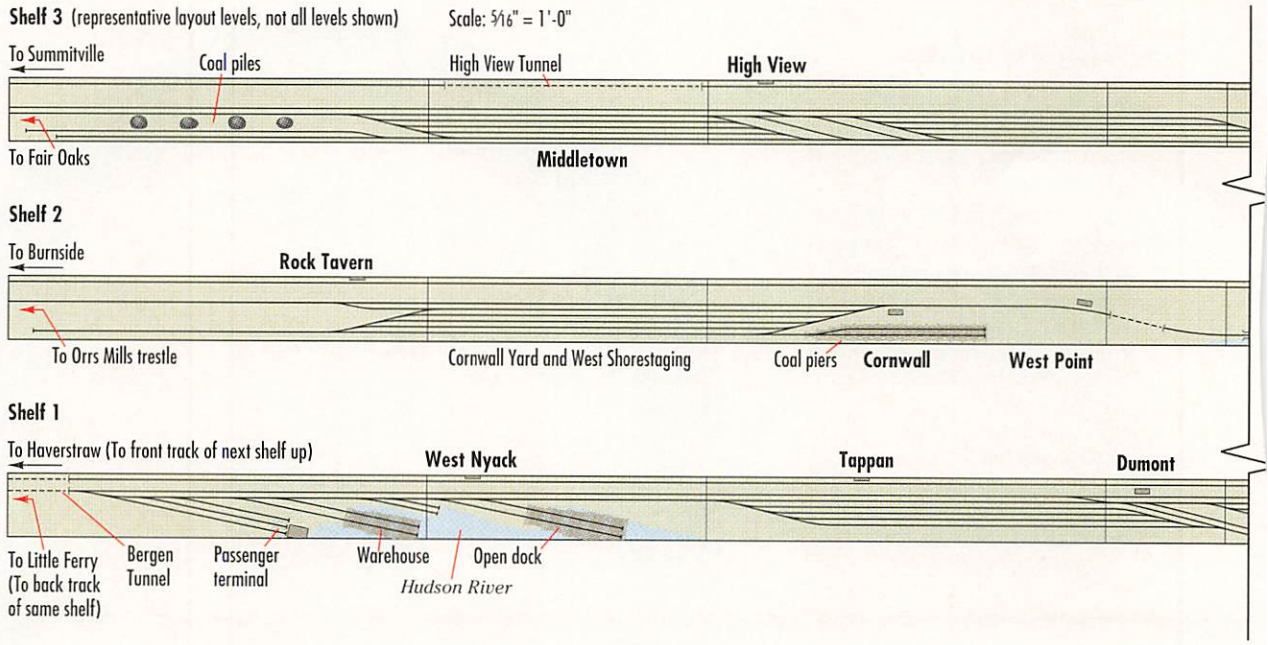
There was good news: As shown by the track plan, our formal dining room is reasonably large, and we use it only once or twice each year. An around-the-wall design on a narrow shelf would leave room for family dining when required.



Illustrations by Rick Johnson



An O&W switcher trundles across an inlet of the Hudson River on the author's multilevel N scale layout in his dining room.



And bad news: An around-the-wall plan would block both doors. Because of infrequent family use, however, unblocking a door does not have to be accomplished quickly. It just has to be feasible.

A helix of a mess

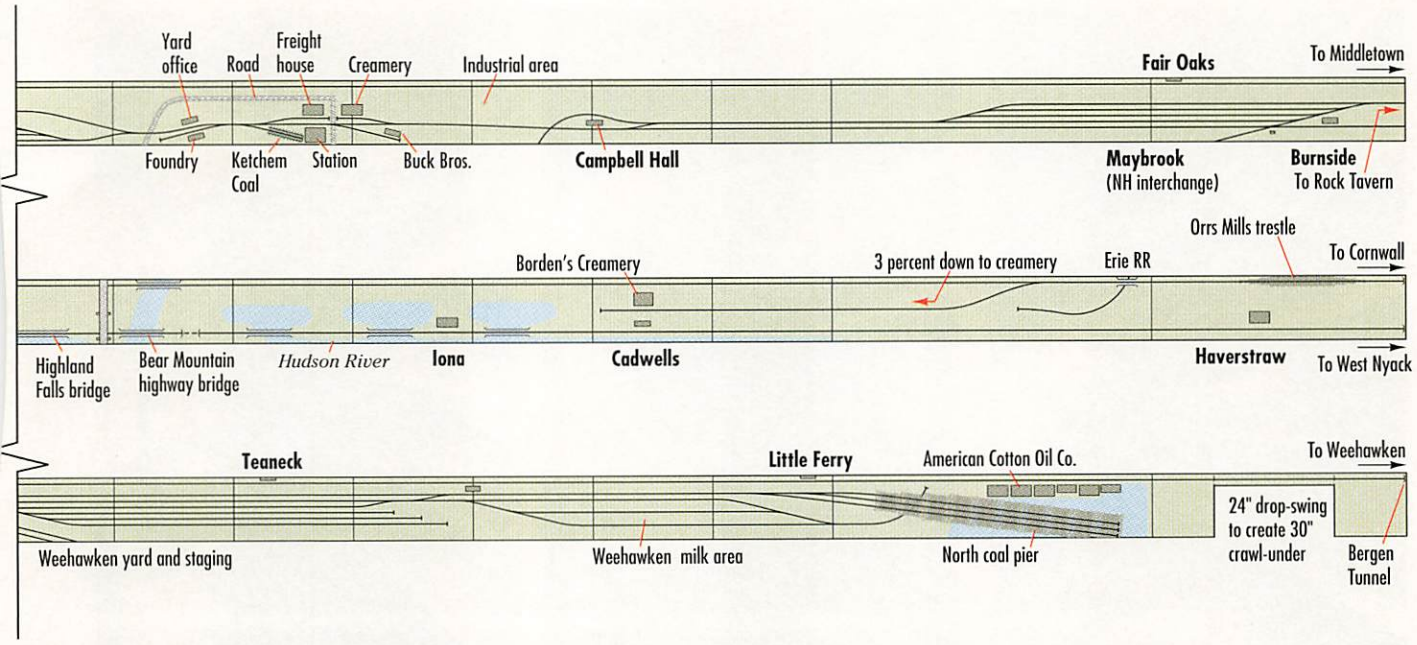
Developing a design for the benchwork was about turning a disadvantage into an advantage. I thought about expanding my existing layout. If I added a second deck, about 28 percent of my railroad would have been in a space-eating hidden helix.

While I was pondering how to solve the hidden-track problem, I imagined standing inside the helix.

How could I change the hidden track into visible track? Then I imagined the diameter of the helix expanding and expanding until only the walls of the room constrained further expansion. The invisible was now the visible. The disadvantage was the advantage. Since my imaginary room-size helix had a very gentle slope, I could increase the vertical spacing between laps to create space for scenery. Instead of eliminating the helix, I totally embraced it and abandoned the traditional layout design entirely.

The two-thirds rule

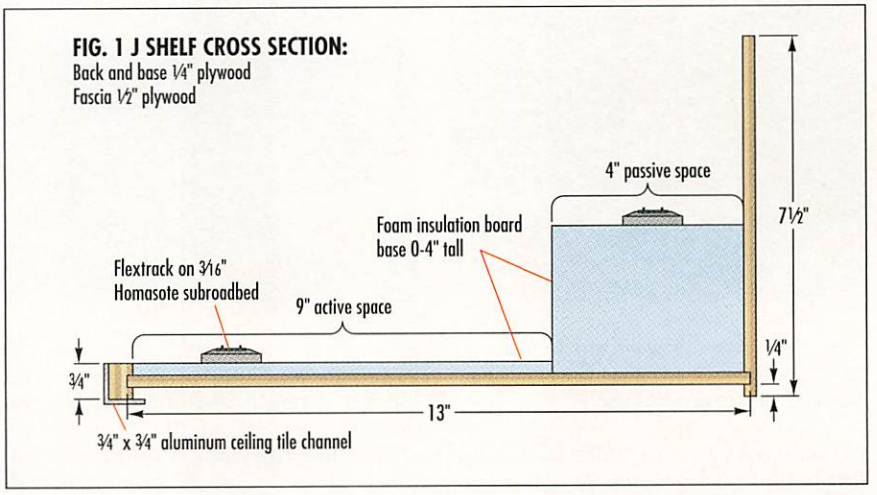
My two-thirds rule says for every 3" of shelf width, you need 2" of clearance. The operative word here is "clearance," which should not be confused with top-of-track distance.



Harry Zannie, author's collection

On July 30, 1950, O&W F3 503 has just exited the Bergen Tunnel and is headed for the joint O&W-West Shore (New York Central) station at Weehawken, N. J. A ferry will transport passengers across the Hudson to their New York City destinations.

By experimenting, I found N scale required a minimum of 5½" of space to uncouple cars with a small screwdriver-like tool. Aesthetically, it leaves something to be desired, but it is the mechanical minimum I can live with.



Two laps per shelf

I developed several options of various widths, clearances, and minimum and maximum shelf heights and reviewed them with my friend, Rick White. To gain the additional mainline run I wanted, Rick suggested two laps per shelf. The front lap would be the highlighted lap where all the switching moves would take place. The back lap could be visually de-emphasized but not hidden. It would be used to gain height and distance, have station stops for passengers and milk, and do other passive operations.

The two-lap approach gave me both wider shelves and greater vertical clearance and helped with operations, maintenance, and aesthetics. It also created gentler grades.

I eventually settled on 7¼" of clearance, top of rail to the bottom of the next shelf. Using the two-thirds rule, my active depth could be up to 10¾". In practice, however, I kept the active depth 9" and allotted 4" for additional scenery and the back track.

NYO&W in the dining room

As for railroads, I like Eastern anthracite haulers, and my favorite among these is the New York, Ontario & Western. The O&W extended from Cornwall, N. Y., on the west bank of the Hudson River northwest to Oswego on Lake Ontario. It had trackage rights over the West Shore (New York Central) south to Weehawken, N. J., across the Hudson from New York City. There were also branches northeast from Summitville, N. Y., to Kingston and from Summitville southwest to Port Jervis and Monticello. To the north, branches served Rome and Utica, N. Y.

Significant O&W revenues came from summertime passenger traffic to

Three photos: Marlene Saxton

These three photos show the relative working heights of various levels when Gary is sitting, standing, and atop a foot stool.

Catskill resorts and daily milk shipments, but coal became its major traffic source. Around the turn of the century, it built a major branch southwest from Cadosia, N. Y., to the anthracite coalfields in northeastern Pennsylvania near Scranton. In a short time, the trickle of coal became a flood, and around 1913 the road was double-tracked from the coalfields to Cadosia and then east to its connection to the West Shore at Cornwall.

As the coal business withered, the O&W tried to change into a bridge line and returned to a single-track line before abandonment in 1957. Maintenance costs were high: The railroad cut across ridges on a tortuous alignment and hence had many tunnels and high steel viaducts. Most of the on-line towns were small – ideal for modeling, bad for business.

Another attribute peculiar to the O&W was its appearance of time-travel. Economic stagnation left little money for capital investment. Thus, from 1913 until single-tracking, the physical plant and the little cities and villages it ran through hardly changed at all.

To me, the combination of coal, bridge, local, passenger, and milk traffic, plus the chance to play H. G. Wells, was irresistible: Change the rolling stock a bit along with a few time-specific items such as vehicles and advertising signs and *viola!* – I can operate the railroad in several different decades with very little effort.

Signature items

The O&W had several points of interest that defined the railroad. Some were scenic: tunnels, trestles, river crossings, traversing the Catskill Mountains, and trackage rights along the Hudson River. Some were needed for operating fidelity: yards, coal breakers (collieries), coal piers, the milk-processing infrastructure, small towns, and interchanges.

To locate each on the track plan, I used an ordinary spreadsheet program with plotting ability to list the key features and their mileposts. I then had the spreadsheet plot where the locations would fall on the spiral-shaped layout's main line.

As you would expect for the first try, there were problems. Some of the key points were in locations that made implementation impractical. The yards, for example, had to be on the front track, which corresponds to odd-numbered laps. I also wanted tunnels to help cover up the "fly-over" corner where the entrance is located. And to accommodate depressed streambeds, trestles had to be on the back track, which was a nominal 3½" (47 scale feet) higher than the scenery in front of it.

By pushing and pulling individual points of interest to different mileposts but never changing the sequence, I was able to locate most where they could be modeled effectively.

Making and mounting shelves

The nominal 8" shelf spacing allows for minor maintenance but not for construction. Layout sections had to be constructed with track, wiring, and scenery added on the workbench before they were slid into place. All but the lightest repairs require removal and replacement.

On the second level, Gary modeled this truncated pier to represent the towering Bear Mountain Highway Bridge over the Hudson.

I built the shelves from ¼" plywood in J sections as shown in fig. 1 (page 71). I reinforced the shelves with ¾" x ¾" suspended-ceiling grid aluminum angle sections.

After 18 months, only one of the 91 shelf units has warped. If I can't straighten it out, I'll simply replace it.

Rather than poke a lot of holes in the wall, I mounted the shelf brackets on posts and then attached the posts to the wall. This allowed me to accurately and easily measure and connect the brackets to the post at my workbench, rather than trying to use marks on the textured dining room wallpaper. If I were doing again, I would use ¾"-thick posts rather than ½".

Thanks to Digital Command Control (DCC), most of the shelf modules need only a single Cinch Jones connector. They connect each shelf to a bus running around the room.

For track, I used Atlas flextrack and turnouts modified with springs, as described in "How we built the Alkali Central" on page 105 of the December 1995 issue of *Model Railroader*.

Operation

The layout was designed to provide a high degree of operational accuracy, with one notable exception: The model is all single track, whereas the prototype was generally double-tracked during the period I model. I felt I couldn't get enough operators in the room to handle enough traffic to justify double track, and double track takes more space. I prefer single-track operation, and the O&W was a single-track railroad in the end – close enough for me.

There are no hidden storage or staging tracks. The classification yards are big enough to accommodate planned staging and have extra room for some unbalanced movements as well as to allow switching. Some yards are more than a scale mile long.

The layout is big enough that train movements generally follow the prototype. For example, coal hoppers typically have three moves from the breakers: Move 1 is to Mayfield yard, shelf 6. Move 2 is to Middletown yard, shelf 3. Finally, move 3 is to the coal piers or interchange on shelves 1, 2, or 3. Empties reverse the steps.

Generally speaking, the Lehigh Valley and Lackawanna interchanges each generate and receive one run-through train to the New York, New Haven & Hartford at Maybrook. The Delaware & Hudson, the Delaware & Northern, and the Central RR of New Jersey set out individual cars. Finally, both the NH and the "interchange" with the northern end of the O&W at Cadosia generate whole trains and cuts of cars.

The O&W served many small towns in the upper Delaware Valley, and my ambitious plan includes all but one of them. Because of overcrowding, I will probably drop about a third of them when tracklaying gets up to that level.

Lighting

One of the first problems I discovered was the last to be solved: lighting. When I was trying to find the minimum clearance between shelves, I discovered they were very dark at the back. I tried several approaches to solving the lighting problem.

Under-shelf lights would work, but the special under-cabinet light strips that would work with my small clearances are expensive – I needed 300 linear feet of the stuff. Christmas tree lights, though inexpensive, were not bright enough. And, because I needed to pull shelves out for construction and maintenance, I didn't want a lot of connectors and plugs to deal with.

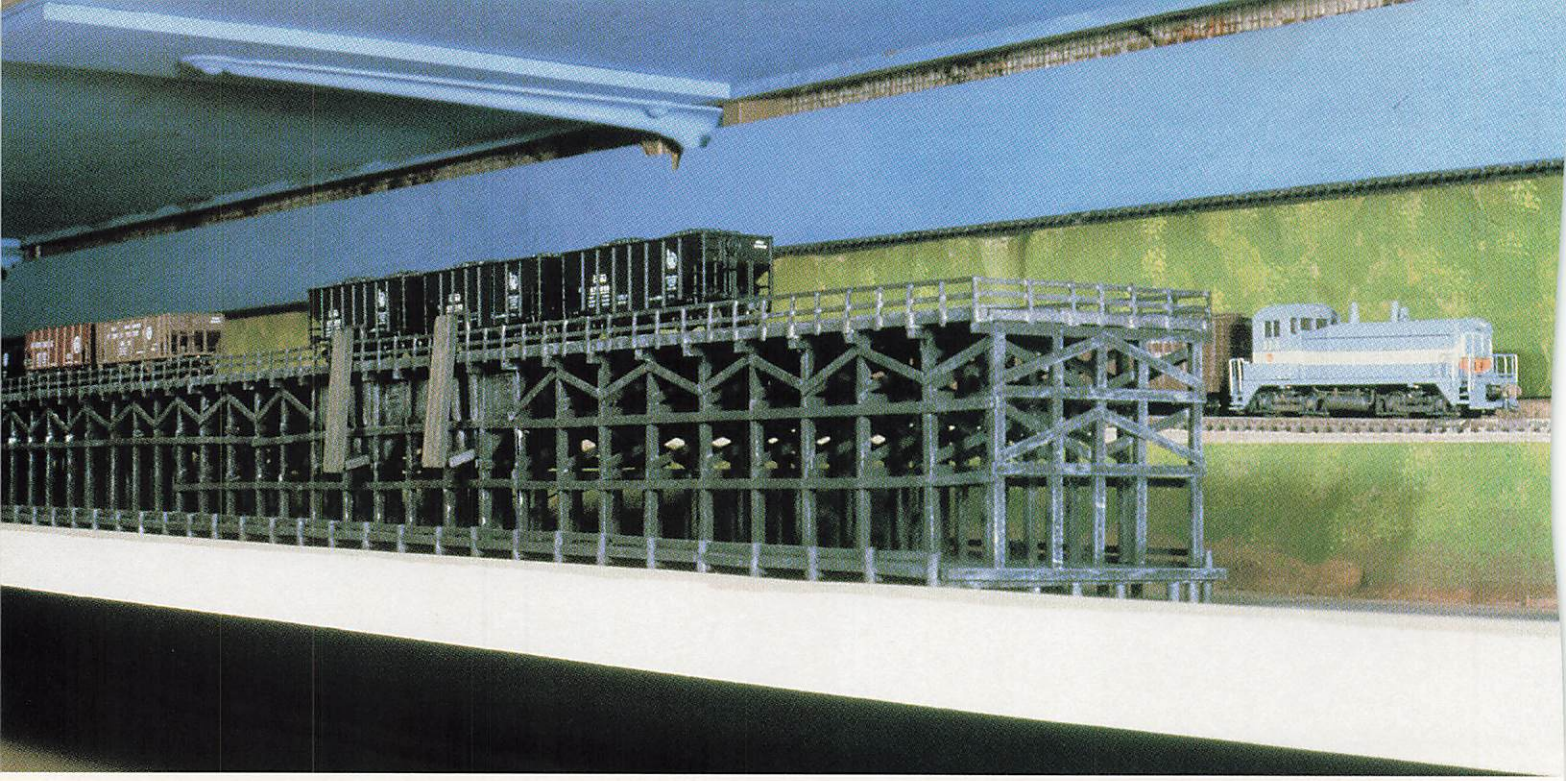
Putting ceiling track lights as far away from the shelves and as low as possible illuminated most of each shelf, but halogen lights are not a diffused light, so operator shadows would be a problem.

I finally hung a half dozen four-foot, double-tube fluorescent fixtures 18" from the ceiling but facing up, making the room very bright. Though it does not have the nice aesthetic effect of a moderately lit room with highlights on the layout, all light is indirect, so there are no sharp shadows from operators.

Bad compromises

If a duckunder is bad, a crawl-under is worse. When operating the layout, a 30" crawl-under is the only way in or out of the room. However, none of the other options was as favorable, for all would have resulted in a loss of railroad space or completely losing use of the dining room.

Also, because each bay window required a 24"-long section, I needed to leave a couple of inches on each end for bridging tracks. As a result, I was



NYO&W Historical Society collection

Top: Gary built his model of the O&W's massive coal piers at Cornwall, N. Y. – the destination for much of the tonnage moving out of Pennsylvania – parallel to the main line to save space. **Above:** The O&W tug by the pier in this April 1911 photo is the *Ontario*.

stuck using no. 4 turnouts in the yards. If I had been able to use 30" sections, I could have used no. 6 turnouts instead.

The key: wireless DCC

Many things contributed to the inspiration for this layout. They included a love of the prototype, not being afraid to dream big in small spaces, trying new uses for traditional rooms, exploring new modular benchwork concepts, and pushing structural design beyond cautious limits. But there was one key development in model railroading that made my library design possible: wireless DCC.

Think of the nightmare of tangled wires and operators trying to use conventional tethered walkaround cabs – the state of the art just a few years ago. Think about the thin benchwork with no fascia or space for throttle plugs. Think about removing layout sections for work. Thanks to radio-controlled DCC cabs and simple wiring, my dining room New York, Ontario & Western in N scale layout is rapidly becoming a practical reality. MRP

Besides sharing their dining room with the N scale New York, Ontario & Western RR, Gary Saxton and his understanding family have enjoyed many prototype and model railroading experiences together over the years. The Saxtons live in Houston, Texas.

For more information

More information on the New York, Ontario & Western is available from the NYO&W Historical Society, P. O. Box 713, Middletown, NY 10940; www.nyow.org.

Learning points

Now that my layout is started, here are some helpful things I've learned along the way:

- Thinking out of the box has no risk. So do it.
- Building out of the box has risk. Reduce risk with full-size mock-ups and other experiments.
- Examples useful in setting physical design criteria already exist. Although they are not always in a model railroad setting or design literature, look around. Check your place of work, where you shop, and your home for creative ideas and materials.
- Think of compatibility and incompatibility with your needs. Don't be needlessly inhibited by traditions or past practices.
- Don't just sit there in the proverbial armchair thinking you are boxed in with poor alternatives. Do something, at least on an experimental basis. The results will surprise you! – *Gary Saxton*


CSXT 900019
NO TRESPASSING

CSX's Eastern Kentucky Division

Times have changed in Appalachia, but the railroading is still well worth modeling

By Anthony Hardy

Eastern Kentucky and coal have been synonymous for decades. Before the last 30 years' spate of mergers, the major railroads serving the region were the Chesapeake & Ohio and Louisville & Nashville (both are now part of CSX). The Norfolk & Western (now Norfolk Southern) nibbled at the eastern edge.

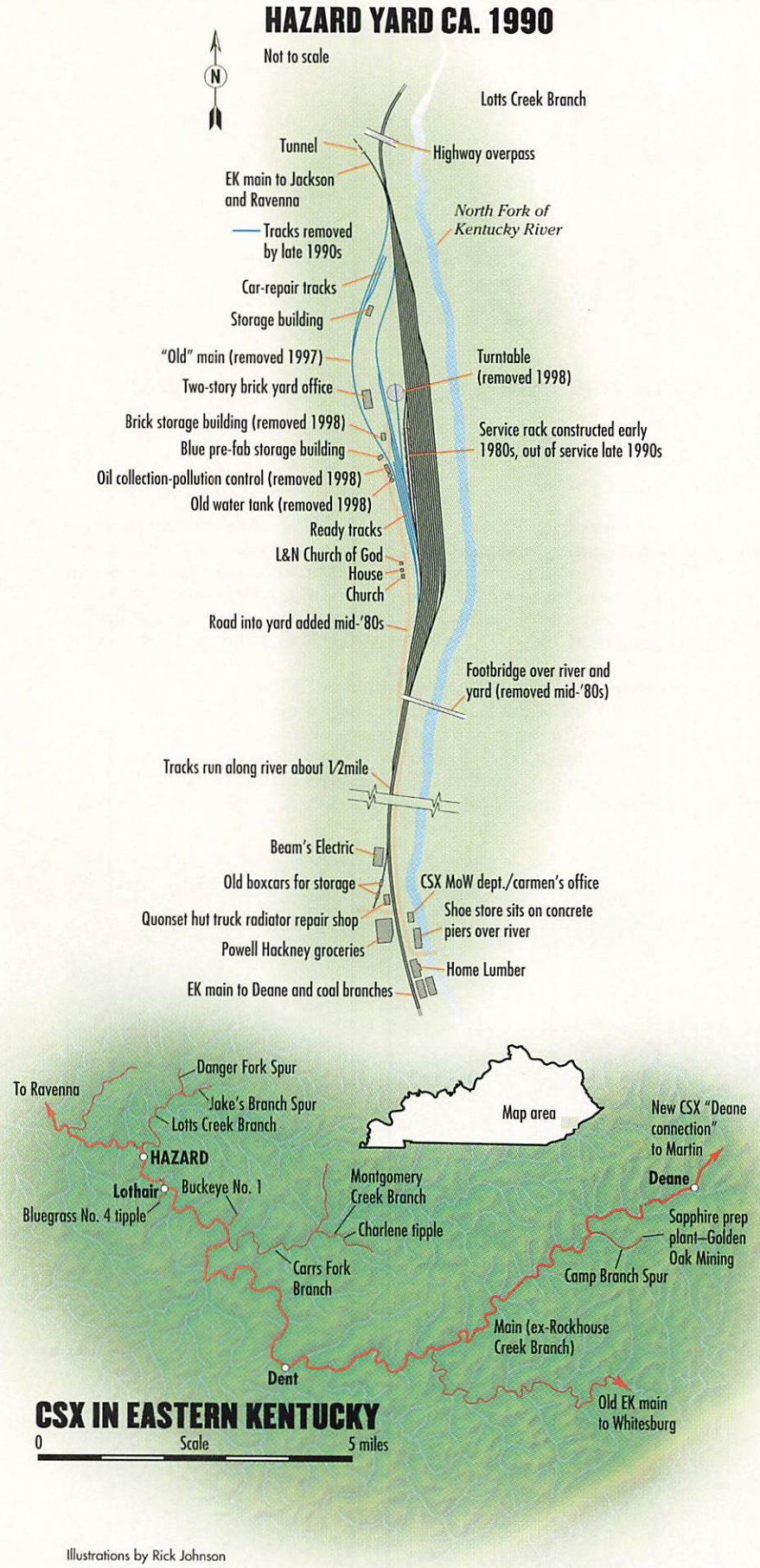
The L&N had two main divisions in this region: Cumberland Valley (CV) and Eastern Kentucky (EK). A major terminal and yard on the EK, which is the focus of this article, was at Hazard. For more than half a century, the yard at Hazard was a base for mine runs that supplied empty hoppers to a large number of mining operations via an extensive branchline network.

As is typical of Appalachia, the yard was squeezed between a river and a mountain. The North Fork of the Kentucky River ran between the town and the depot located near the yard lead. The main part of the yard, where the yard office, turntable and roundhouse, railroad YMCA, and servicing facilities were located, was a half mile up the river with no road access. Crews and the yard employees parked in town and walked over a suspension bridge across the river, then up a path to the

Left: A mine run headed for the Davidson spur is being shoved caboose-first toward the branch junction on August 12, 1998, crossing the North Fork of the Kentucky River. **Below:** AC4400CWs 114 and 121 cross the concrete bridge near the junction.

Robert Vaughn

Robert Vaughn



Illustrations by Rick Johnson

yard. This pedestrian bridge also provided access to homes and churches on the west side of the river.

After diesels took over in the 1950s, the roundhouse was reduced to two stalls, and the concrete coal dock became a sand tower. In the 1980s, a road was finally built into the yard, and the suspension bridge and coal dock came down. A bridge pier is decorated with a "Welcome to Hazard" sign to this day. Two sentinels of the steam era, a pair of water tanks, hung around until 1998 when they were scrapped as the yard was "modernized."

Today, Hazard is a barren outpost, with only the brick yard office, abandoned diesel fuel rack, and a small metal storage building still standing. At the south end of the yard a two-story metal office building, a small storage shed, and two retired boxcar sheds occupy the old depot site.

One other reminder of the old days stands alongside the yard: the L&N Church of God. For many years, the minister was a former L&N employee.

Mine runs

Mine-run operations out of Hazard began to change with the coal boom of the 1970s and the advent of unit coal trains. Previously, mine runs would travel up the branches to just drop off and pick up cars at the line's various tipples. More recently, each crew takes an entire train to one of the larger coal load-outs where they move it slowly through the loading process, and finish up by returning to the yard with the loaded train.

The longer trains, larger 100-ton hoppers, and coal boom created by the oil crisis in the '70s left Hazard extremely cramped for space. There was also a shortage of cars and locomotives to move them. Privately owned unit trains began to appear, among the first being a Georgia Power (GGPX) train that used Ortner's Rapid Discharge hoppers.

One of the most interesting trains operating into Hazard from the late '70s to the early '90s was the South East Coal unit train. Tiring of car and power shortages, South East bought their own fleet of cars and six rebuilt GP20s. Later they added four GP38-2s – three news ones built to L&N specs and one used. The crew and caboose were the only things on the train that belonged to the L&N.

Left: The City of Hazard is tucked into a bend in the North Fork of the Kentucky River with the CSX yard spread along the opposite bank to the southwest.

In the early 1980s, the SECX car fleet, originally well-worn 50- and 80-ton hoppers, was upgraded with more-modern ex-Pittsburg & Shawmut 4-bay 100-tonners and some brand new 100-ton hoppers from Evans.

By the 1990s, the small, single-car tipples closed or were bought out and consolidated into more-modern load-outs. Although a few smaller tipples were still in operation, most of the mine runs became unit trains. The utility companies shifted to lighter aluminum cars with increased capacity, and typical unit-train lengths increased from 72 to 90 cars or more. This required that some trains be broken in two to fit into the shorter yard tracks.

Another change that began to take place in the late '80s and early '90s was a shift from hoppers to "bathtub" gondolas. This reflected the customers' shift from traditional bottom-dump unloading to rotary dumpers that turn the entire car upside down. Everyone benefitted, as the cars were lighter, and there were no hopper doors to maintain. The first gons arrived from Bethlehem-Johnson in 1988. Thousands of old conventional hoppers were also rebuilt at CSX's ex-C&O Raceland Car Shops at Russell, Ky.

Other traffic

There was a small amount of traffic other than coal in the Eastern Kentucky region. Liquid fuels and a variety of agricultural chemicals remain a common inbound shipment. Logs are shipped outbound. As some of the small tipples shut down, old coal spurs became team tracks where logs are loaded onto modern beam-type log cars or converted flatcars.

Although mine runs have changed, they're still interesting. Some trains simply come into the yard, pick up a mine-run crew, and head out to be loaded, but others require more attention. Cabooses are still common due to the need for back-up moves to reach some load-outs.

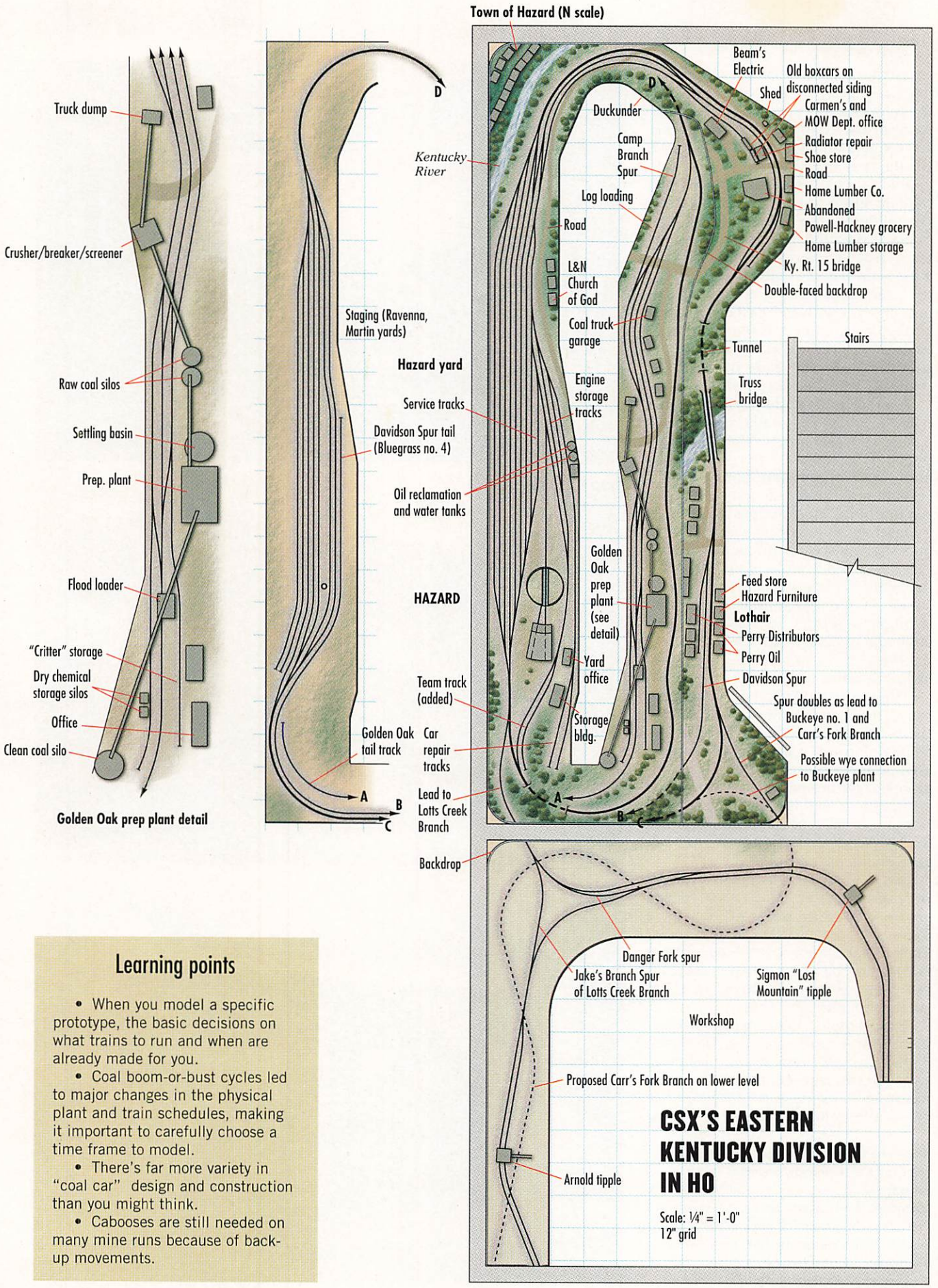
For example, trains loading at Bluegrass No. 4 tipple on the Davidson Spur just out of Hazard are broken in two, and two trips are required to load the train. A caboose is placed on the half of the train that's being loaded so

Scott Beckler

Anthony Hardy

Anthony Hardy

Top: The Charlene load-out, near Vicco off the Carr's Fork Branch, is similar to the Sigmon tipple on the author's layout and may be modeled on a lower deck in the adjacent workshop. **Middle:** The brick yard office is one of the few remnants of the L&N era. **Bottom:** The carmen's office is a typical modern steel structure that's closer to town .



Learning points

- When you model a specific prototype, the basic decisions on what trains to run and when are already made for you.
- Coal boom-or-bust cycles led to major changes in the physical plant and train schedules, making it important to carefully choose a time frame to model.
- There's far more variety in "coal car" design and construction than you might think.
- Cabooses are still needed on many mine runs because of back-up movements.

Illustration by Rick Johnson

a crewman on the end platfom can control the brakes and an air whistle while the units shove from the rear. The trains actually back all the way from the yard to the tipple, a distance of about two miles. When the first half is loaded, the train returns to the yard, and the second half is shoved up the main to the load-out spur. I once watched half of a unit train of aluminum hoppers being shoved up the line, caboose first, by a pair of big SD50s. Impressive!

Another mine that required shoving moves was the now temporarily closed Sigmon (formerly Lost Mountain) load-out on the Lotts Creek Branch. This branch originates at the north end of Hazard yard, then a few miles later branches into the Danger Fork Branch and Jake's Branch Spur. To reach the Sigmon load-out, the train headed out the Jake's Branch Spur and backed around the wye onto the Danger Fork Branch. After loading, the train returned via the wye's other leg to the Lotts Creek Branch.

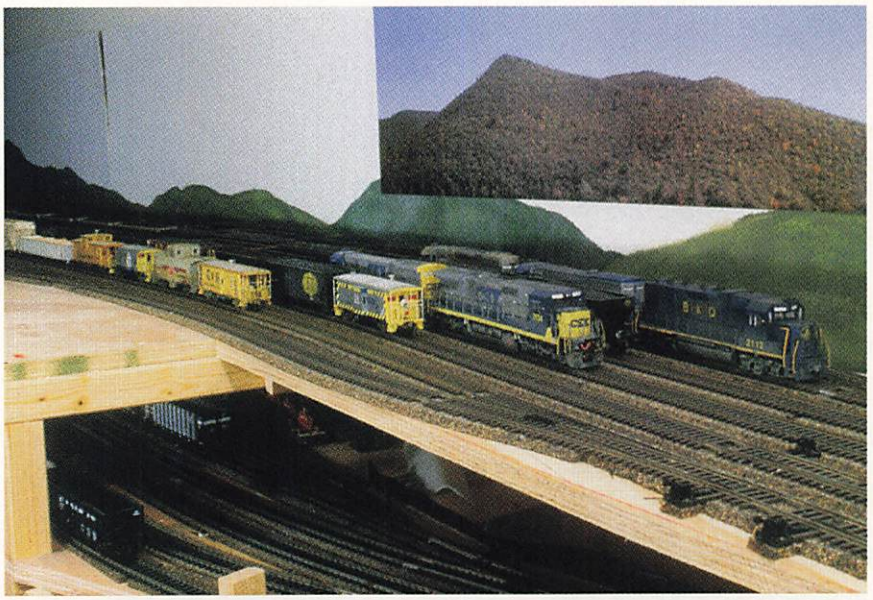
At one time, Starfire Coal's Arnold tipple was active on the Jake's Branch Spur. Trains would head out toward Sigmon up the Danger Fork Branch, then back around the wye onto the Jake's Branch Spur. This tipple was recently torn down.

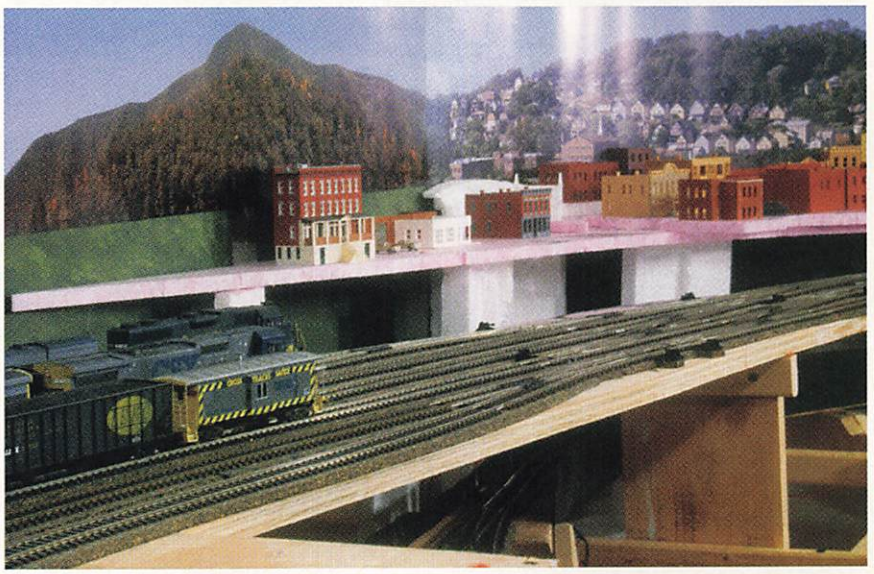
Back in the 1970s and '80s, typical mine-run power was a pair of four-axle Alcos, GEs, or EMDs, but today you'll find the road power – usually a huge GE AC4400CW or EMD SD70MAC – staying on the train for loading. For me, modern six-axle power, cabooses, mine-runs featuring multiple trips, and beautiful Appalachian scenery are an irresistible mix to model!

Modeling the EK

My HO model railroad focuses on Eastern Kentucky operations out of Hazard from the early '90s right up to today. The area has evolved very little during the past decade, so changing eras is a matter of some minor equipment and motor vehicle swaps.

The layout is built in a 9'-6" x 24'-0" room, and I plan to add the Lotts Creek branch in an adjacent 13-foot square room. When completed, it will comprise Hazard yard with staging tracks





Progress report – Top: Views of the less-finished part of the layout show the main part of the author's Hazard yard with staging underneath. **Middle:** Downtown Hazard is beginning to take shape along the backdrop in the corner. **Bottom:** South East Coal's private owner unit train went out of business in the early '90s, but it lives on in HO scale.

Model photos by Scott Beckler

Robert Vaughn

Jay Ramsey

Anthony Hardy

underneath, a large tipple-preparation plant in the main room, and the branch to one or more tipples and a large prep plant in the adjacent room. Two hidden tracks represent the Bluegrass No. 4 and Buckeye No. 1 load-outs. Trains will disappear into these tracks and return loaded.

It's impossible to cram every feature of the yard and surrounding area into my space, so a lot of selective compression was required. Since the yard now looks rather barren, I'm building it as it appeared in the '90s before the roundhouse, turntable, and car-repair track were removed.

The yard was shortened to fit my truncated unit trains, which are a fifth the length of the prototype's – 18, 19, 22, and 24 cars. This fit the room length almost perfectly.

Operation

I've been operating the railroad for over a year now, usually by myself. I had little idea how much operation I could get out of a railroad of this size, but I was pleasantly surprised!

I'm using train designations based on actual CSX coal trains. Most are assigned the number of actual trains, but a few are "free-lanced" to run to loaders on my layout that the CSX doesn't actually serve today. However, all of my trains actually operated in the EK region at one time or another.

For a look at a typical operating session, see the box titled "EK operations in HO." Such a session represents one day's action on the EK and consumes two to three delightful hours. When the Lotts Creek branch opens up, that will add more time and interest to each session. MRP

Anthony Hardy, his wife, Tina, and three daughters live in central Kentucky, where he designs special air-handling units for Trane. He grew up in Irvine near L&N's Ravenna yard and EK division headquarters. Anthony has had "some sort of train" since he was three. This is his third HO layout.

Top: CSX AC4400CW 49 and C40-8 7564 were parked at the out-of-service fuel rack in Hazard yard on September 7, 1998. The old roundhouse came down a few months later. **Middle**: An empty South East Coal unit train prepared to leave Hazard on Oct. 5, 1987. **Bottom**: The Golden Oak (now Cook & Sons) prep plant at Sapphire, Ky., is the main load-out represented on the author's layout. **Right:** The Charlene load-out near Vicco off the Carr's Fork Branch is similar to the Sigmon tipple on the author's layout and may be modeled in the adjacent workshop.

EK operations in HO

Here's a typical train operating sequence followed on my HO edition of the EK:

Bring empty train U537 from Ravenna (hidden staging yard) into Hazard and leave the train parked in the yard. When a mine-run crew is available later, it will continue to the Golden Oak Mining Co.

Break empty train T505 into two sections and add a caboose to the front of the first half. Shove the train (from the rear) up the Davidson Spur to the hidden Bluegrass No. 4 tipple and spot it for loading.

Move loaded unit train N266 from the Golden Oak prep plant to Hazard yard. (This train was left at Golden Oak and loaded at a prior operating session.)

Run loaded train W297 from Hazard yard to Ravenna (hidden staging track).

Add a caboose to empty train T560 and run it from Hazard yard to the hidden Buckeye No. 1 tipple. (The caboose is required due to the back-up moves needed to reach the tipple. I may add a wye someday and leave a caboose spotted there, as CSX does.)

Bring the first half of loaded train T505 from Bluegrass No. 4 loader into Hazard. Move the caboose and locomotive onto the empty half of the train and shove it up the branch to Bluegrass for loading.

When a mine-run crew becomes available, take U537 to the Golden Oak Mine at Sapphire for loading. No caboose is required for this move.

Train T560 is now loaded, so bring it back from Buckeye No. 1 Mine to the Hazard Yard.

Run empty train N254 from Ravenna staging to Hazard. It will include some miscellaneous cars of chemicals and two empty log flats on the head end.

Have the yard crew switch out the miscellaneous cars for tomorrow's run. Pull a block of empty cars for a Cincinnati industry from storage so they can be taken with the next Golden Oak train for loading. Two log cars need to be dropped off on a siding near Golden Oak. The empty fertilizer covered hoppers are ready to be returned to Ravenna, so tack them on to the end of T560 waiting at Hazard. Have a road crew take N266 to Ravenna staging. The second half of T505 is now loaded, so bring it back to Hazard. Remove the caboose and reassemble the complete train for the next available road crew. The locomotives need fuel, so move them to a locomotive service track next to the roadway to await refueling by truck. Load train U537 at Golden Oak using the Golden Oak switcher.

These moves take two or three hours to complete and represent one day's action. One or two additional trains will be run when the Lotts Creek branch and perhaps the Carr's Fork Branch are built in the adjacent room. – *A. H.*

Scott Beckler

Timesaver +

An enhanced version of John Allen's popular HO switching layout

By John Flann

This track plan owes its origins to the popular Timesaver switching layout developed by the late John Allen many years ago. In the 1980s, I built a modified HO version of this plan in two sections using a simple box construction similar to what David Barrow has since dubbed "dominoes." This made it easy to transport, an important consideration in the United Kingdom, where I lived then, and increasingly so in North America as well.

The resulting layout fits on two sections, each measuring 16" x 45", and is 7'-6" long overall when set up. Since it's portable, I can operate it from either side for fresh views of the

John Flann built this enhanced version of the well-known Timesaver switching puzzle as a portable HO layout.

Learning points

- Modifications to a popular switching track plan made it easier to transport and more linear in appearance.
- Small layouts can be viewed and operated from both sides, for the fun of different perspectives.
- Shuffling marked-up playing cards creates an endless variety of car-spotting options.

scenes and a different perspective on the operations.

Stretched plan

The track plan is a simplified, flattened, and elongated Timesaver. Its new proportions give it a more linear look and provide space for structures, which the original lacked.

Essential to this switching layout is the runaround track, which allows cars spotted on facing-point spurs to be picked up, then placed behind the locomotive. Each spur can accommodate only the specified number of 40-foot cars. Using cars longer or shorter than this standard may add some complexity, and hence fun, to operations. The plan will provide a home for ten freight cars.

Some imagination is required to place a layout designed specifically as a switching puzzle into context. I envision it as a town on a branch line. Staying within the confines of this plan will offer enough challenging switching for most modelers.

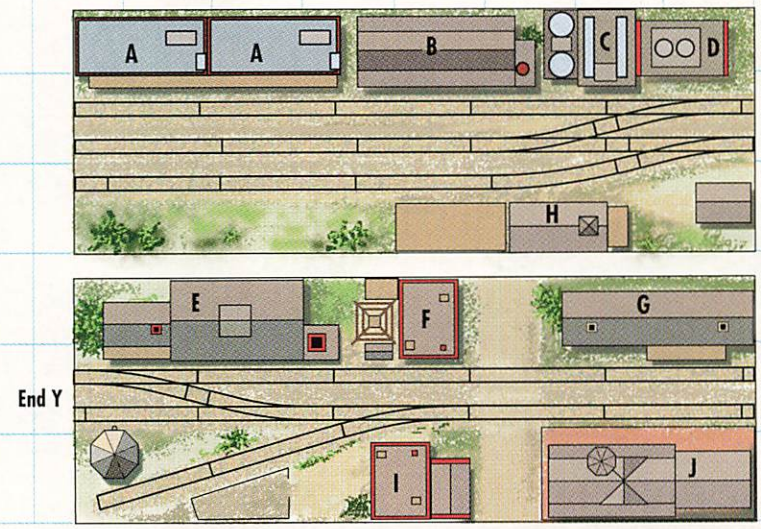
Shuffle, cut, and draw

To direct the layout's operation, I used ten old playing cards. I marked each card with the reporting marks and number of one of the freight cars. I also designated a permanent spot for each car on the layout; when a car was in a train, its spot was to remain empty. I drew a schematic diagram showing all spots with their assigned cars for handy reference.

I begin operations by placing each car at its spot with the locomotive on the main line. I then shuffle the cards and draw three. I make up the three-car train in the order the cards were drawn by picking up the appropriate cars. This train is left on the main.

Then I shuffle the first three cards back into the deck and draw three more. I switch the cars on the main back to their spots, unless their cards happened to be drawn again, and pick up the three newly drawn cars to be made up as a train in order. The diagram shows a typical sequence. Operation can continue until dinner or bedtime intervenes. MRP

After retiring, John Flann and his wife, Jean, emigrated from England to the United States to be near sons Christopher and Nicholas and their families. In the United Kingdom, John was an award-winning modeler and frequent contributor to the model press. His Clark Fork HO layout was featured in Great Model Railroads 2000.



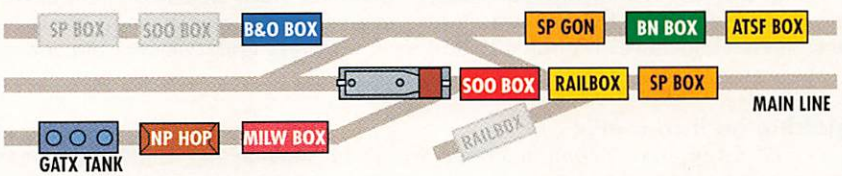
A IHC Two kitbashed Luigis Restauraunts (348-910)
B IHC Factory with loading silos (348-3505)
C IHC Gruesome Casket Co. (out of production)
D IHC Machine Shop (348-47764)
E Model Power Brewery (00451)
F IHC General Store/Finance Co. (47798)
G Con-Cor Edison's Lab (out of production)
H Life-Like Church (kitbashed, 1350)
I I HC Grocery store/auto repair((348-3504)
J IHC Rico Station (348-807)

Scale: 1" = 1'-0" 6" grid End X joins End Y Each layout half is 16" x 45"

OPERATION ON THE TIMESAVER PLUS SWITCHING LAYOUT

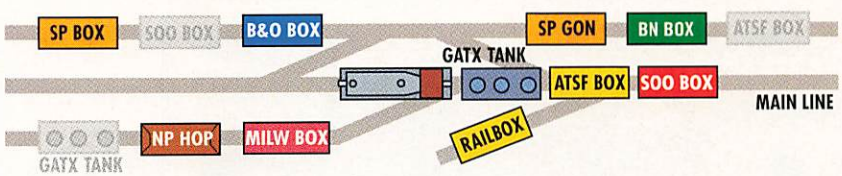
STAGE ONE

Timesaver Plus track diagram showing designated (home) (old playing card) which has been written up with the positions for ten cars, each having a corresponding car cardmatching car's reporting marks and car number.



STAGE TWO

Position the ten cars at their home positions with the engine on the main line. Shuffle the playing cards, and draw three; for example, SOO box, Railbox and SP box. Commence work to make up the three-car block, in the order in which the cards were drawn. Any other cars moved during switching must be returned to their home positions.



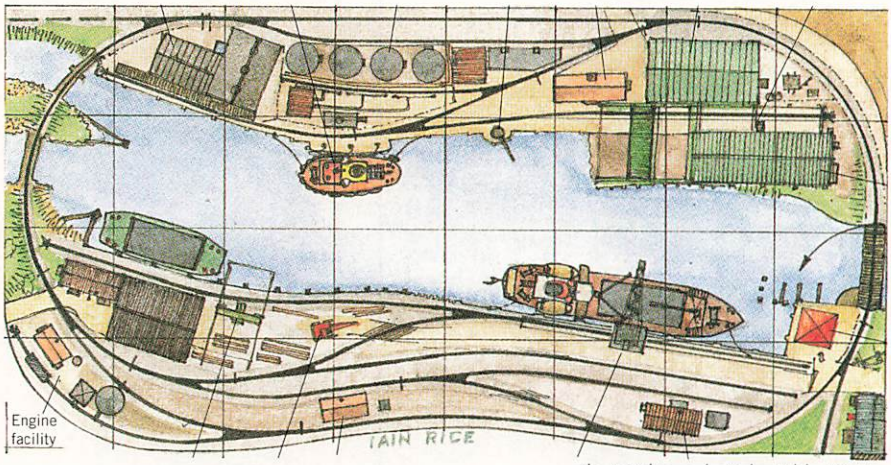
STAGE THREE

Put all ten cards together, shuffle, and pick three new cards (cars), to be blocked in order. The three cars of the first block are switched back to their home positions, unless their cards happen to be drawn again. For example, GATX tank, ATSF box, SOO box. Proceed with switching to make up the new block, again returning all moved cars back to their home positions.

STAGE THREE, STAGE FOUR, ETC.

Repeat stage one, stage two, etc. until cows come home.

Illustrations by Robert Wegner



The 4x8 Chesapeake Harbor Belt by Iain Rice

The good ol' 4 x 8

One of the highlights of the year is the arrival of the latest issue of MODEL RAILROAD PLANNING – either I lead a dull life or you put out a great magazine. The 2002 edition is no exception.

As a modeler of four decades standing, I want to thank you for your focus on the "good ol' 4 x 8." In the 39th year of our marriage, my wife and I are now living in our 21st house. Tempting as an around-the-walls empire sounds, several 4 x 8s built as layout sections or stand-alones provide a continuity that a bigger layout could never match.

You continue to provide fresh ideas in every issue. Thanks!

David B. Johnson, Bloomington, Ill.

Inspiring track plan

I had started finishing my basement in preparation for an HO railroad, but I got stalled because I couldn't find exactly the track plan I wanted. I was leaning toward a logging line from Iain Rice's *Small, Smart & Practical Track Plans* (Kalmbach), but it wasn't quite what I had envisioned.

His MRP plan for the Loleta & Mad River (page 18) fits all my needs and has inspired me to get back to work. Thanks, Iain!

Phil Kubiak, Wayne, N. J.

Making it work

Congratulations on MRP 2002. It's another well-balanced issue. I particularly enjoyed Paul Dolkos's article on "Making an inch a mile." It's very easy for any layout designer to place track close to the backdrop to make things fit, but Paul showed how to make this work. To me, attention to this level of detail is what sets excellent layouts apart from the merely good ones.

Barry Cott, Calgary, Alta., Canada

[Barry has joined the growing ranks of authors who have made the effort to share their creativity with the rest of us, as you'll find beginning on page 60. Also see Paul's comment on his article below. – *Tony Koester, editor*]

C&O's Brooke Avenue Yard

Thank you for publishing Bernie Kempinski's article about the Chesapeake & Ohio's Brooke Avenue Yard in MRP 2002 (p. 52). That is an outstanding example of a true gem of a prototype railroad facility to model.

Please extend my compliments to the author and to everyone else who was involved in selecting and preparing articles for this year's MRP.

Ed Vondrak, Indianapolis, Ind.

I really appreciated Bernie Kempinski's N scale track plan of Brooke Avenue Yard in MRP 2002. I have yet to build a layout and have been searching for just the right track plan for a while. Once I saw Brooke Avenue Yard, I was hooked. Now I'll join the C&O Historical Society [P. O. Box 79, Clifton Forge VA 24422, www.cohs.org; annual dues including the monthly *C&O Historical Magazine* are $35] to obtain more prototype information. I plan to begin construction in the next few weeks.

It amazes me to think that such a made-to-model railroad existed – an entire "division" that can be represented in a 6 x 8-foot area. Unlike what I've been told about most layouts of this size, I think this one will keep me busy for many years.

Ron Sharp, Chattanooga, Tenn.

Making an inch a mile

The drawing that accompanied my article on "Making an inch a mile" in MODEL RAILROAD PLANNING 2002, page 30, was revised and eliminated a key point: Squeezing a structure with a peaked roof between the track and the backdrop looks better if the back of the building is cut off behind (rather than at or in front of) the roof peak, as shown in the photo below on the left. A viewer's line of sight to the end of the building, revealing the short back roof, can often be blocked with a tree or another structure.

The less desirable approach, shown in the photo below, has the structure simply bump into the backdrop rather than popping out from it.

Paul Dolkos, Alexandria, Va.

Both Paul Dolkos

Vehicle dating

The vehicles facing one another in the photo on page 52 of MRP 2002 are a 1957 Chevrolet and a '57 Ford, and the fourth vehicle from the bottom of page 53 is a '58 Chevy. This suggests the caption's 1956 date is at least a year off.

Nit-picking aside, however, given my fascination with rail-water junctures, MRP 2002 is the best one yet. Thanks to all the authors for some excellent photos and illustrations coupled to enjoyable and inspiring narrative. After nearly four decades of armchair model railroading, I just might finally get around to laying track on some platforms I've constructed.

John Simon, Portsmouth, N. H.

Another slight turn

It occurred to me that rotating my track plan for the C&O's Brooke Ave. yard about 30 degrees away from the wall would leave room for access behind the layout without having to duck under to get to the rear access pit. The plan would stay essentially unchanged; only the area near the wall would have to be modified.

Bernie Kempinski, Alexandria, Va.

Rich Weyand

Capturing the N&W

I always look forward to both of Kalmbach's annual model railroad magazines, *Great Model Railroads* and MODEL RAILROAD PLANNING. I can always find inspiration and new ideas in both.

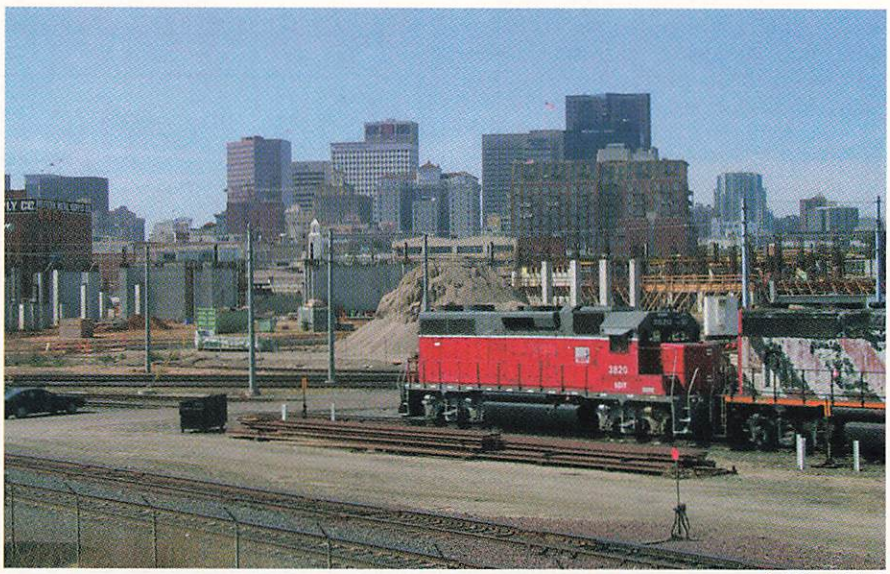
While I'm not a Norfolk & Western modeler, my favorite article was the one by Rich Weyand on "Capturing the immensity of prototype railroading." I did notice, however, that the symbol for the cross-section through the Lindsey/Glen Alum/War Eagle/Devon peninsula was drawn with the arrows facing the wrong direction. (I'm in the engineering business, and it's my job to spot that kind of mistake.)

Gary Roe, Ft. Worth, Tex.

Planning Tip

Backdrop bias

Building "not-so-flats" at an angle



Both Don Mitchell

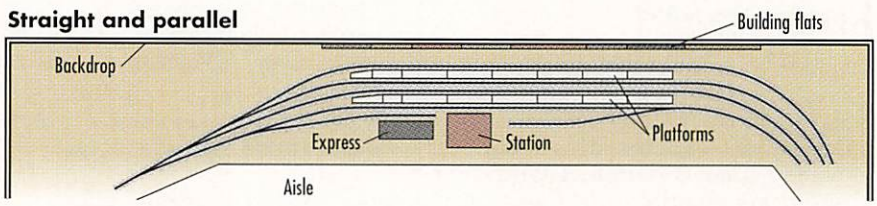
This view of the formerly rail-served industrial area in San Diego, Calif., now being replaced by new construction, shows that few of the buildings are seen "flat on." Only those directly behind the San Diego & Imperial Valley Geep appear truly flat.

City scenes made of building flats along the backdrop, as shown in the drawing below labeled "Straight and parallel," often strike a false note with viewers. The reason is simple: Thin flats do not reflect reality. In real life, we see two sides of most buildings, as the photos show.

A better sense of reality can be created by slightly angling tracks and structures in relation to the backdrop, as depicted in the drawing labled "Backdrop bias." Building structures on the bias allows two sides of each one to be seen from all typical viewing angles for greater realism.

It's also best if the tops of the flats (or the scenery behind them) rise up to or above the viewer's eye level. This

Straight and parallel



Backdrop bias

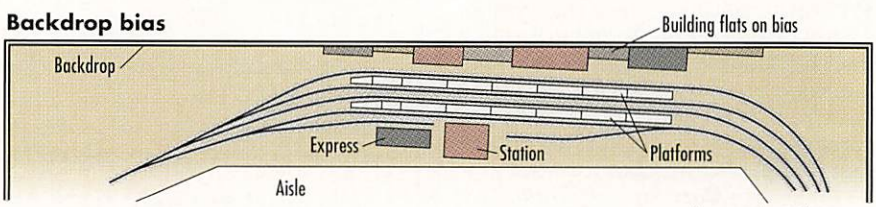
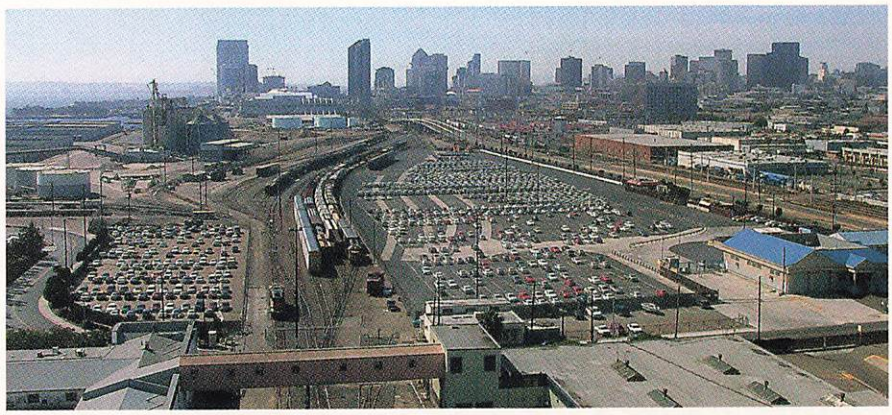


Illustration by Kellie Jaeger

also reflects real life where the horizon is always at eye level. Any buildings with tops below eye level are best built to be seen in full dimension, with their roof details evident.

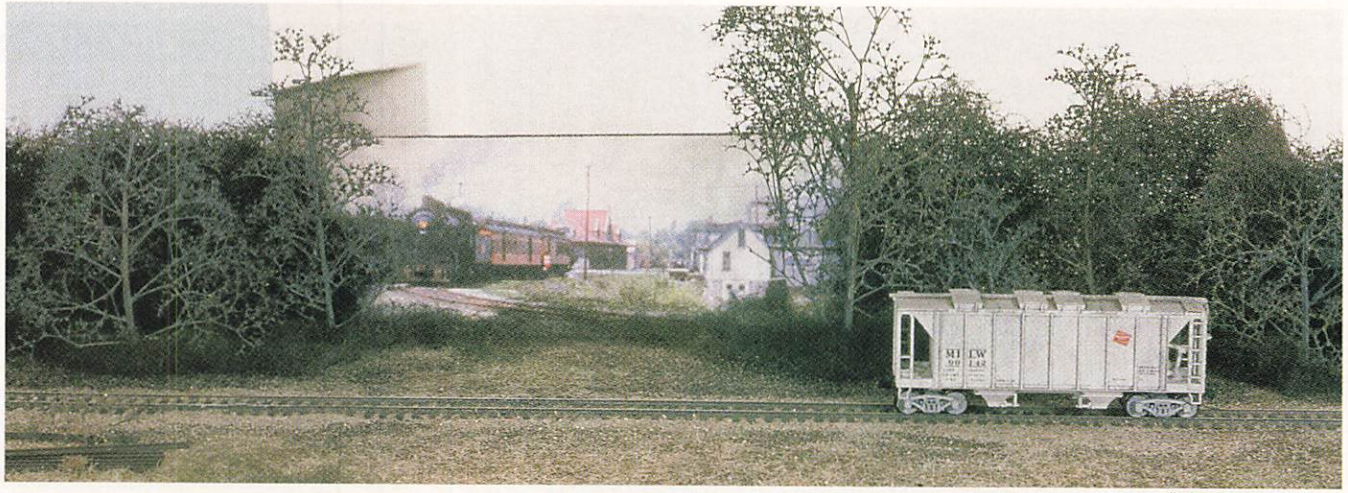
The key to the most realistic city scenes is therefore buildings on a bias with their tops at or above eye level. – *Don Mitchell*



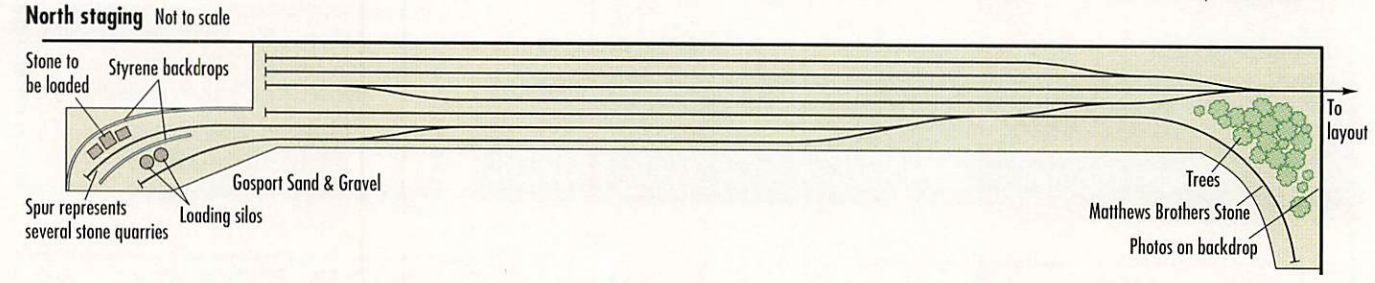
Downtown San Diego rises in the distance behind the Burlington Northern Santa Fe yards. The ocean defines the horizon line, which is below the tops of the taller buildings despite the photographer's elevated position.

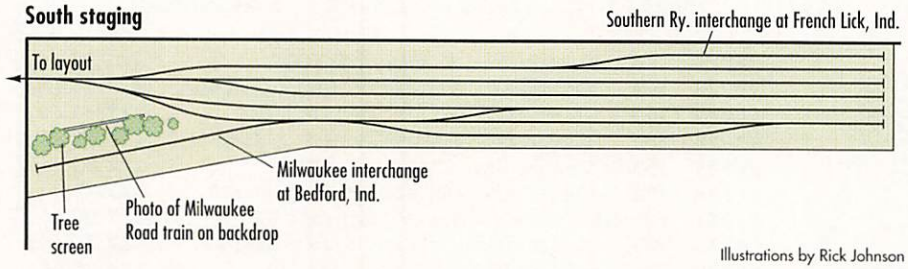
More operation from your staging yards

Minimalist scenery adds operation opportunities



All photos Lance Mindheim





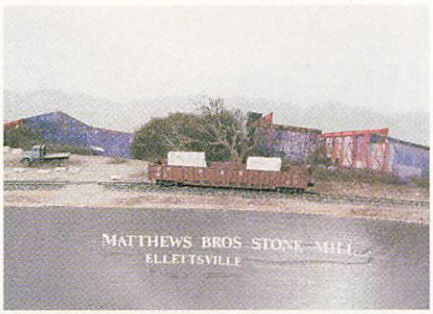
Illustrations by Rick Johnson

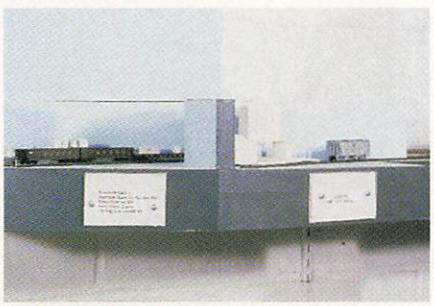
When I built the N scale Monon layout that was featured in the July 2001 *Model Railroader*, I wanted to create a fairly accurate and prototypical model of a very specific area of Indiana near Bloomington. While I achieved what I wanted in terms of realistic scenes, an unforeseen problem arose when I wanted to have operating sessions on my railroad.

On most layouts, locals (way freights) provide one or more interesting jobs for crew members. These peddlers move from town to town during operating sessions, switching grain elevators and other lineside industries along the route. Unfortunately, the Monon's locals did very little work in the area I chose to model. Most of the local switching was done by the yard job or by the limestone trains serving the quarries.

My operating crew and I came up with a solution that produced work for the locals without diminishing the prototypical integrity of the rest of the railroad: We added industrial mock-ups to the staging yards.

My staging yards are open and easily accessible. They represent parts of the Monon where there was lots of work for local freights. About 15 miles north of my layout's northern boundary, for example, was a fairly active sand-and-gravel plant. The same distance to the





These three photos show the short extensions Lance Mindheim added to his accessible staging yards to create work for locals beyond the part of the Monon he elected to scenic. The three locations represent **left**, the Milwaukee Road interchange at Bedford, Ind., **top**, Matthews Brothers Stone, and **above**, Gosport Sand & Gravel with a spur serving several stone quarries behind it.

south, in Bedford, Ind., was an interchange where the Monon swapped thousands of cars per year with the Chicago, Milwaukee, St. Paul & Pacific (Milwaukee Road).

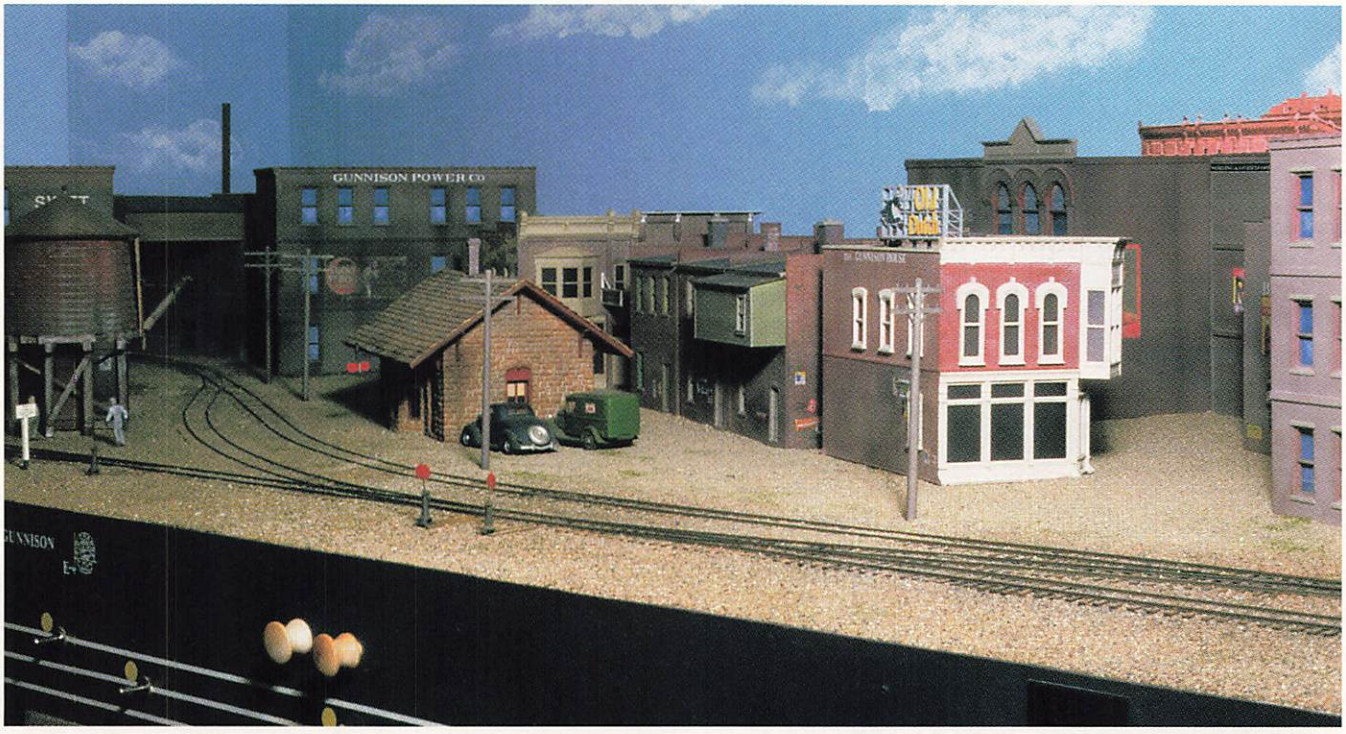
In the north staging yard, I therefore added a length of track to represent the Gosport Sand & Gravel Co. A similar track in south staging was designated the Milwaukee Road interchange. Other short stubs became a branch servicing several stone quarries and a spur to Matthews Brothers Stone.

I installed short sections of blue-painted styrene as view blocks, and I pasted photos to the backdrop to add at least a minimum level of scenic effect to these offstage/onstage switching areas. The photos show how they look.

These minor changes to my staging yards have effectively extended the geographical boundaries of my layout. I've noticed that during operating sessions crews are so engrossed in the work of their trains that they overlook the lack of a full scenic treatment at these locations. Functionally, these places are complete and add some welcome and enjoyable action to our operating sessions. – *Lance Mindheim*

Sneaking into Gunnison

Hiding that pesky hole in the wall

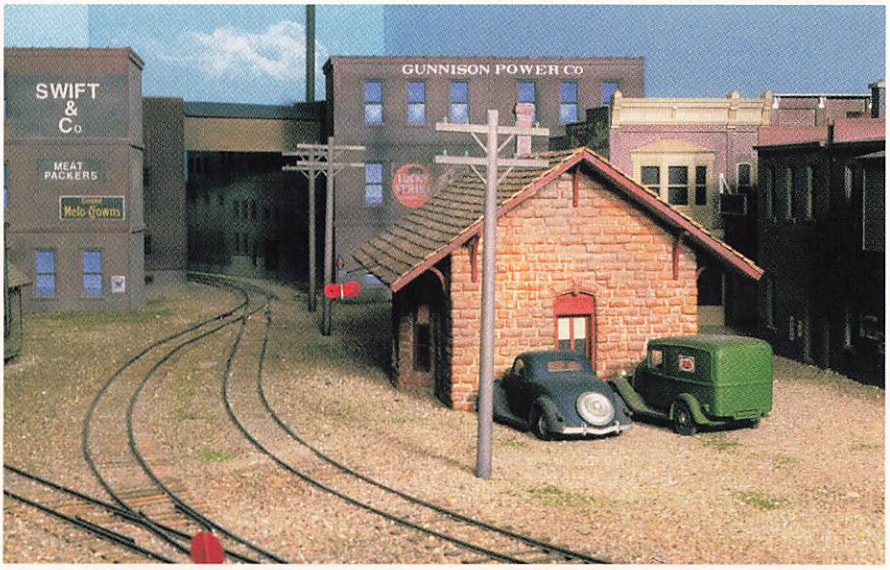


Don Mitchell recommends background structures on the bias for a more realistic look than with flats (page 88). Mary, my wife and modeling partner, and I agree with Don. You can see that in the accompanying photos and track plan of Gunnison, Colo., on our On3 Colorado & Southern layout.

Gunnison has evolved since our article in MODEL RAILROAD PLANNING 1999, but the original constraints remained: It's in a closet reached by tunneling through a wall. We're not done with this area's final detailing, but we've made enough progress to resolve the problem of hiding the entrance-exit hole.

The photo at right shows how we built an overhead coal chute between two power-plant buildings to hide the top of the hole. We also put building flats and lighting through and beyond the hole to suggest that the scene continues.

The other side of the closet wall features a rural scene at Cooper, and there a conventional tunnel portal was perfectly appropriate. – *Bill Miller*



Part of downtown Gunnison, Colo., was modeled in a small closet, **top**, on Bill and Mary Miller's On3 Colorado & Southern. To hide the hole through the closet wall, they put an overhead chute along its top edge and placed a sky backdrop and structures in and beyond the hole, **above**. Their solution is diagrammed at the top of the opposite page.

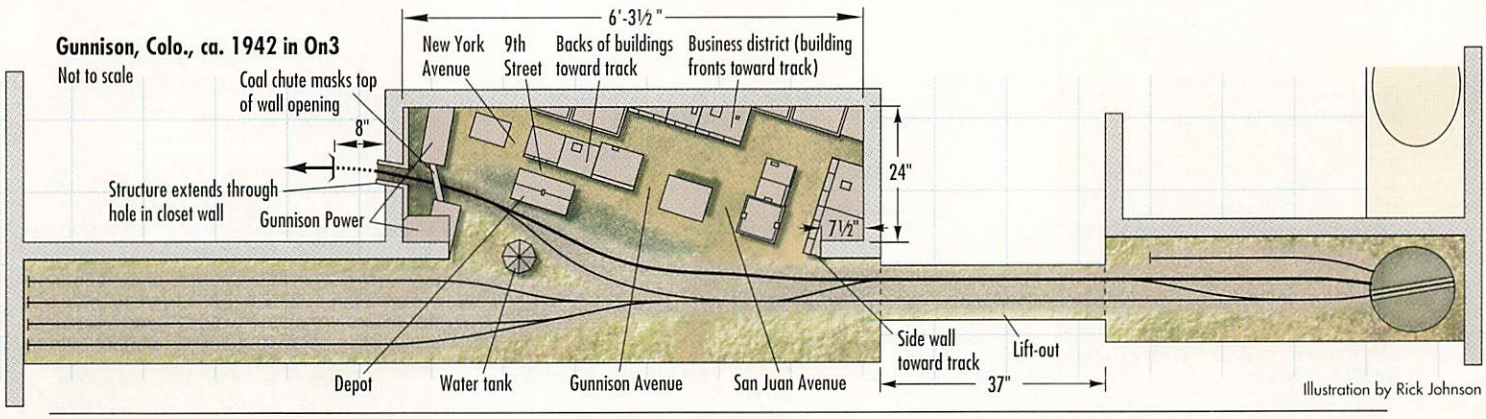


Illustration by Rick Johnson

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Rear Platform

A learning experience

Just because you can doesn't mean you should

By Marty McGuirk

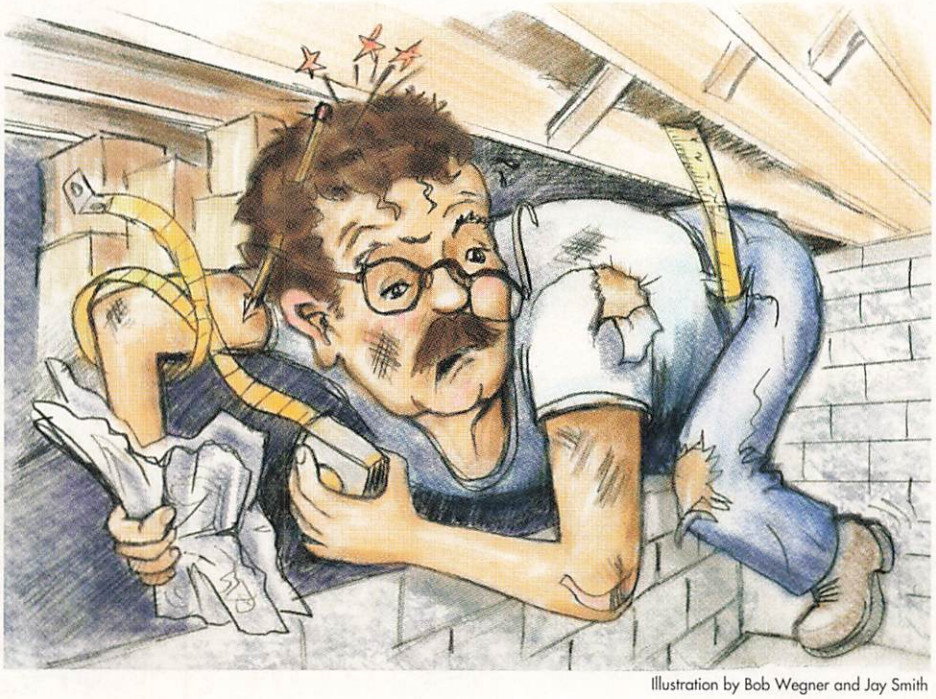

Illustration by Bob Wegner and Jay Smith

A recent change of jobs and relocation resulted in our acquisition of a brand new house with a finished layout room in the basement, complete with good lighting, dedicated electrical circuits, and carpeting. In short, it's the nicest place to build a new layout I've ever had.

Across one wall of the basement is a crawl space about 53" high, 18 feet wide, and 12 feet deep. In the short time we've lived in our new home, that tempting space has already taught me a lot about what I do and don't want out of a model railroad.

As I sketched preliminary track plans, I did my best to use every square inch of the available area, including that crawl space. I considered using this space as a place for a staging yard or perhaps to locate some turn-back loops. Even a helix might fit in there. Better yet, I could run the main line around the perimeter of the entire crawl space to increase the run.

I was still thinking about various creative uses for this otherwise "wasted" space when I spent a long Saturday afternoon moving some boxes into and out of that crawl space. I emerged with a stiff neck, sore back, and aching knees. Drawing track lines for that space was easy; actually using the space for a model railroad might not be.

Nagging questions began to emerge: How would I build and maintain track in the crawl space, not to mention keep it clean? How would operators know – really know – what their trains were doing back there in the "cave"?

Of course, I came up with really clever answers to such concerns. I could use a closed-circuit security TV system to keep track of trains, much as *Model Railroader* senior editor Jim Hediger has done in his hidden staging yards. I could box in the track to keep dust off of it, making the enclosures out of Plexiglas to allow the TV camera to peer into them. Current-sensing occupancy detectors could also help keep track of the trains. It's possible to design anything; building it may be a different matter!

Luckily, I asked myself two important questions before I started construction: Would using the crawl space markedly improve the railroad? Would problems encountered in crawl-space construction and operation substantially offset these perceived gains?

When I weighed the gains against the problems, I decided that life is already complicated enough; I don't need my new model railroad to add even more hassles. As tempting as the crawl space may be, I'm going to use it for storage and not for a larger layout. MRP

When you're done planning your new HO layout, we have a few suggestions about what to run on it!

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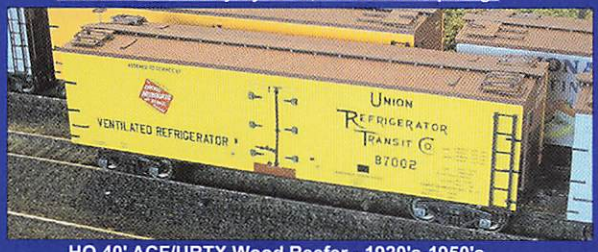

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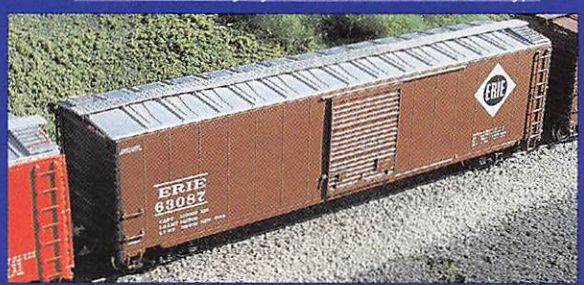

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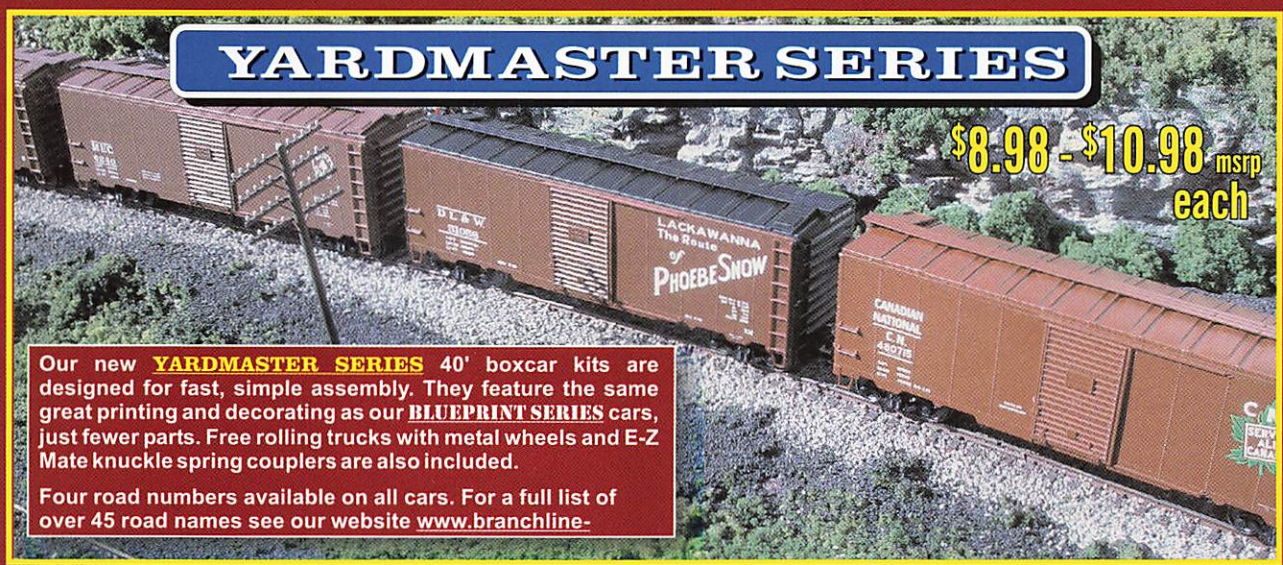

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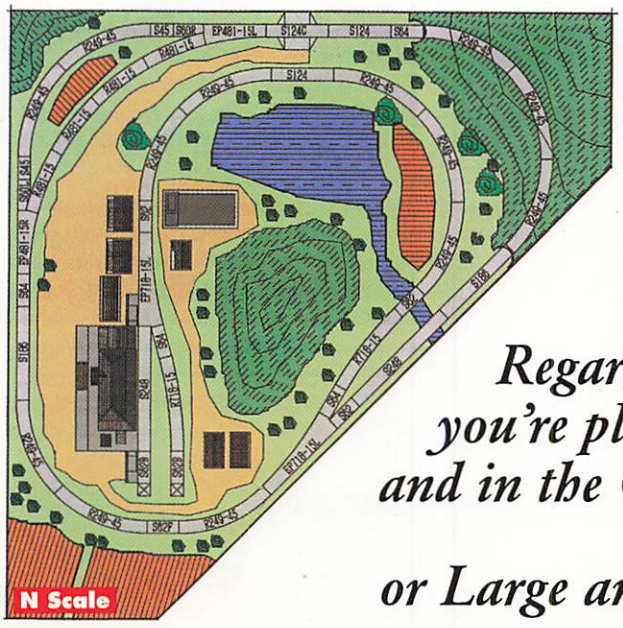

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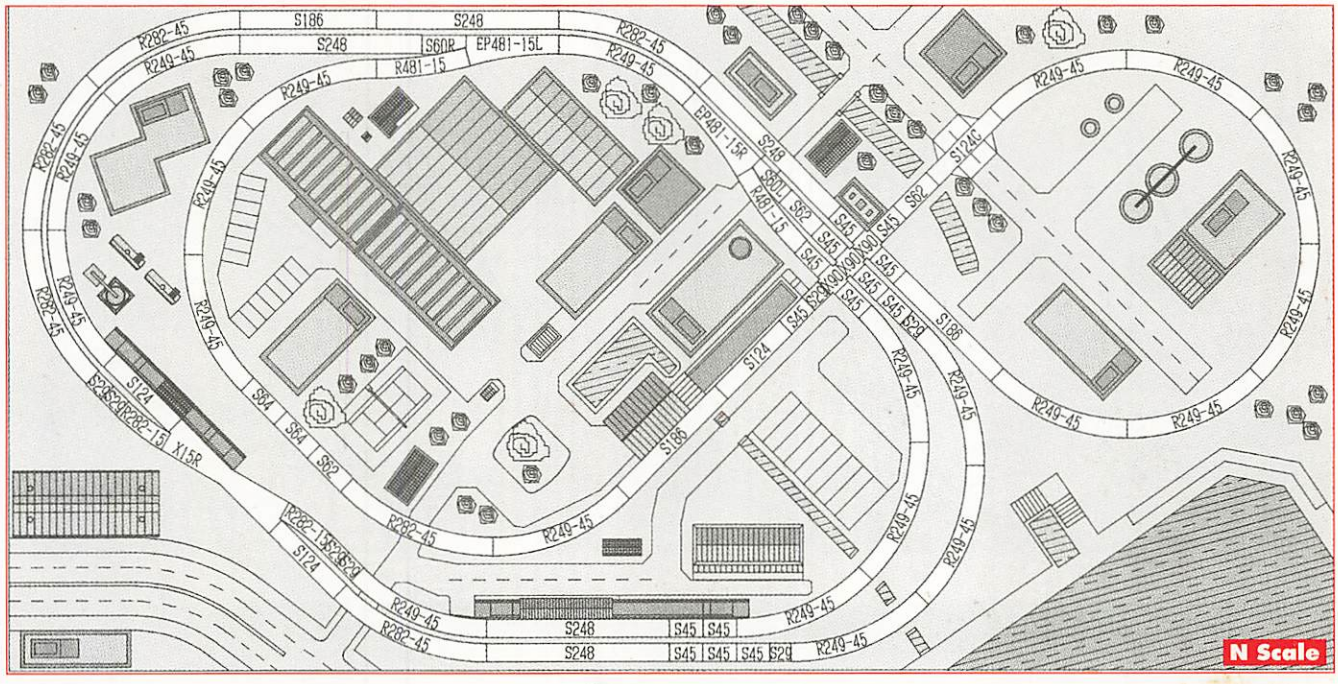

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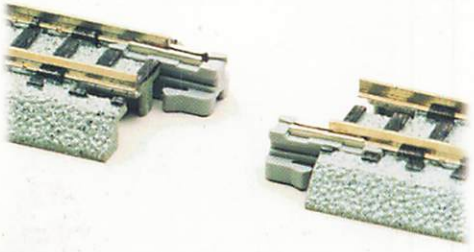

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